

# TWELFTH REPORT

(Fourth Biennial.)

OF THE

## State Board of Health

And Vital Statistics

OF MINNESOTA, 1886-88,

CONTAINING

Report of the Secretary to the Board,

WITH APPENDIX.

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Vital Statistics of Minnesota

FOR THE YEARS 1886-87-88.

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Public Health in Minnesota,

(The Monthly Official Publication of the Board.)

FROM NOVEMBER 1886 TO JANUARY, 1889.



STATE BOARD OF HEALTH AND VITAL STATISTICS OF MINNESOTA, }  
OFFICE OF THE SECRETARY, January 1, 1889. }

*To His Excellency A. R. McGill, Governor:*

SIR:—I have the honor to transmit herewith the Report of the State Board of Health and Vital Statistics for the period of two years, from Dec. 31st, 1886, to Jan. 1st, 1889. It includes:

- I. The Report of the Secretary and Appendix thereto.
- II. The Vital Statistics of the State for 1886-87-88.
- III. Two Volumes of "PUBLIC HEALTH IN MINNESOTA," the official publication of the Board.

Very Respectfully, Your Obedient Servant,

CHARLES N. HEWITT,  
*Secretary and Executive Officer.*

MEMBERS OF THE STATE BOARD OF HEALTH AND VITAL  
STATISTICS.

D. W. HAND, M. D., President,	-	-	-	-	St. Paul.
CHAS. N. HEWITT, M. D., Secretary and Executive Officer,					Red Wing.
V. SMITH, M. D.,	-	-	-	-	Duluth.
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All official correspondence should be addressed to the Secretary, the Executive Officer of the Board.



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## Secretary's Report.

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*To the State Board of Health and Vital Statistics:*

I have the honor to submit my 16th Annual Report as your Secretary and executive officer. A brief review of the sanitary history of the State, before and since, will enable us to get a clear idea of our relative position now.

### SANITARY LEGISLATION AND WORK IN MINNESOTA, 1872-88.

Sixteen years ago the statutes of Minnesota recognized on y local boards of health: I. Township Boards—the Boards of Supervisors. II. Boards of villages and cities, which were of many different varieties, their powers, in some cases, being defined by the local authorities. These boards, of both classes, had no relation to each other; their powers were large but indefinite; provision for penalty was wanting, or vague, and their only activity was in time of epidemic. The result was, that, in emergency, without accurate knowledge, or experience, of the danger to be met, their action was dictated rather by anxiety “to do something” than by ability to do the right thing in the right time and place. There were but two local boards of health with any pretense to continuous life, in St. Paul and Minneapolis. This was the condition of the State, as to sanitary organization, when in the spring of 1872, the Legislature, on petition of the State Medical Society, enacted a copy of the Massachusetts law, organizing the State Board of Health. It gave us organization and general powers, but did not define our relations to local boards, nor specify methods of enforcing quarantine. It made us a Board of Vital Statistics, but left those statistics in charge of a commissioner, as before. This was the third State Board



of Health in the United States—Massachusetts in 1869, California in 1871. There are now twenty-nine such boards, in as many States. They vary, in membership, function, authority, relation to local boards of health, and in other respects. This difference affects their efficiency, and determines the character and amount of their work in their own States, and that larger co-operation with each other, which is the only true foundation of a national health service.

Our law was left as general as was safe, so that there might be no statutory bar to development in any direction which might, on trial, be found desirable. Nor did we ask any changes in the organization and work of the local boards, for the same reason. We very soon found that few, medical men, or people, had any idea of such a body as a Local Board of Health constantly on duty, and with plenty to do. Nearly everybody thought of it as of a fire engine—to be provided for, and to be ready for emergency, but practically useless at other times.

None of us were allowed to remain long in doubt, for during our first year, 1872, the great epidemic of small pox occurred. Scarce a county escaped, and there were probably 1,000 cases and certainly 250 deaths. It found local and state organizations incapable of doing what they ought to have done, for the reasons above specified. Your Secretary followed up every outbreak which came to his knowledge. He urged local boards to their duty, and as the outcome of months of work, correspondence, personal visits, popular fear of the disease, and such local board activity as was secured, he was able to inform you in January, 1873, of nine health officers reporting monthly, and the *beginnings* of popular interest in public health.

The legislature was ready for your request for such changes as the experience of 1872 suggested, and enacted the local board of health law, chap. 8, laws of 1873, relating to village and city boards. It was not much but a beginning, for we had no precedent to guide us, neither of the other state boards having any relation officially to local boards. We could have obtained more legislation at this time, but believed it better to keep in the advance of professional and popular opinion, but not so far as to be "out of touch" with it, or to get laws on the statute books which could not be enforced by the local boards.

The leading principle of the policy of the board as respects work in the State from the beginning, has been the formation

and efficiency of the local boards, believing them to be the units of public sanitary organization. That policy for the last fourteen years, largely determined by experience in actual work, has resulted in definite methods which are peculiarly our own, and have influenced sanitary legislation in other states.

We aimed at a common sanitary code under which all local boards of health—township, city and village—should work, thus putting them on a common basis, defining their powers and duties; and by means of the State Board cementing them into a united and efficient organization for the common good. Chapter 8, laws of 1873, was further amended in 1881, so as to define more clearly the relation of the local and state boards, and a penalty was affixed for neglect or refusal to obey the law. These acts defined for the first time, in the general statutes, the office and duty of the Health Officer, thus clearly establishing the relation of medical men to public health and giving to that relation the importance and dignity which should attach to it.

The township board of health still remained as before—the Board of Supervisors—and we were enabled to make them a means of popular enlightenment in public health by calling attention to their duties and assisting them in various ways.

In 1883, this education by experience, had been materially helped by the many practical advantages obtained by the boards of villages and cities under the new legislation. With your permission I prepared, with competent legal advice, the foundation of the present sanitary organization of the State, Chapter 132, Laws 1883. By that act the township boards were brought into direct relation with the State Board, and other local boards, and the village and city boards were required to have a common organization, “anything in their charters to the contrary notwithstanding.” All were united under the State Board, for the control of infectious diseases and such as are occasioned by ‘nuisance, source of filth or cause of sickness’ (Sec. 6 same chapter). In this way entire independence in purely local management was secured to the local boards, so long as they complied with the general law, while all were united with this Board for purposes common to all.

Another important point gained at this time, was the obligatory report of infectious diseases by physicians, heads of families, and public institutions, to local boards of health, and by them to the Secretary of this board. This legislation has met

with universal approval, and has been the means of "stamping out" hundreds of incipient outbreaks of diphtheria and scarlatina. Some of the township boards are thoroughly efficient in this work, and it is not uncommon for them to hold adjacent boards to a strict accountability in this respect. A few of the leading country practitioners notify me regularly of such outbreaks, and have enabled me to act, in your name, very efficiently and repeatedly.

Since the legislation of 1883 the official work of Public Health in Minnesota has grown steadily and rapidly. In 1885 a still further advance was made and Chapters 4, 200, 222 and 225, Laws of that year gave to this Board and the local boards, conjointly, charge of infectious diseases of animals; control of offensive trades; and to some extent charge of the public water supply.

This large increase of duty and responsibility quickened into active life, many more local boards of health, and the correspondence of our office upon matters of organization and detail grew to very large proportions. To avoid needless correspondence and repetitions I found that some better means of intercommunication must be devised, and proposed PUBLIC HEALTH IN MINNESOTA, a monthly paper, to enable me more readily to reach over 1000 local boards of health, and for the monthly publication of such correspondence, reports, and statistics, as were of current value in the common work. You gave the proposition your approval and the publication began in March 1885, and has continued since, having become a very valuable help to my work and to that of the local boards. Obtaining subscribers, it was admitted as "second class matter" to the mails, so that for a little more than we formerly paid for paper, printing, and postage on 2000 circular letters, we are now able to print and distribute 2,200 copies of the monthly of eight pages, containing the latest information as to disease prevalence and other matter of immediate interest. Other state boards were quick to discover the advantages of such a publication, and followed our example.

#### VITAL STATISTICS.

In March 1887, on recommendations of Governors Hubbard and McGill, by act of the legislature, the charge of the Vital Statistics of the State was transferred to your Secretary and the



returns were required to be made monthly instead of yearly as before. The returns are made by the clerks of township boards, and the health officers of villages and cities, with the exception of St. Paul and Minneapolis, who were especially exempt from the change required by the new law, and the returns from those cities are made, as before, by the city clerks. This was contrary to our recommendation which was, that as the collection of the returns of deaths was already in the hands of the health officers of those cities, they should make them directly to the State Board.

To effect the change from yearly to monthly returns has been a very difficult matter. I have had the cordial co-operation of town clerks as soon as they understood the object—a quicker and more accurate knowledge of the character, locality, extent and severity of the disease prevalence in the State, to enable the quicker and more direct use of preventive or restrictive measures as against disease causes at work on our population. The result has exceeded our expectations, and I am now enabled to present, monthly, a fair exhibit of the above facts and to suggest investigation and successful control, which were before impossible. The system is improving as time and experience enable us to know just what we can do, of which the publication for some months past, of these data in PUBLIC HEALTH is evidence. But it does not tell the more immediately important fact, that with the addition of the reports of infectious disease prevalence, I am able to follow nearly every outbreak of preventable diseases from its beginning to its conclusion, greatly facilitating its local control, and warning adjacent boards of threatening or impending danger. Two or more local boards are thus able to effect intelligent co-operation with very successful results. Out of it all is coming a feeling of mutual confidence and reliance, a powerful aid in the prevention of panic and needless alarm, which are being replaced by popular confidence and support. While there is much to be done in the details of this important work, it is now proceeding on such assured lines as guarantee an increasing use and value.

#### VITAL STATISTICS, MONTHLY PUBLICATION OF:

The regular report on vital statistics is now published in monthly installments, as appendices to PUBLIC HEALTH, with summary of the same facts for the preceding month. This

is the first time that this has been systematically done in this country. The advantage is self-evident, and will increase as familiarity with them educates health officers in their use. I hope, by an arrangement with the National and State Signal Service, to be able to publish, monthly, graphic illustrations of the relation of meteorological conditions to disease prevalence which is now attracting renewed attention.

#### STATISTIC OF LOCAL BOARD ORGANIZATION, WORK, AND CORRESPONDENCE.

I conclude this brief review of sixteen years of progressive sanitary organization by hard and persistent work, with the statistics of such organizations in the State to-day. There are in Minnesota in active relation with the State Board and through it with each other, 1,388 local boards of health. *Village, borough and city boards* reorganized under the State Law 208. *Township boards* 1,180. Together they number over 4,000 members distributed in nearly every inhabited locality in the State, each a well-known citizen. There are nearly 1,400 executive officers in direct communication with your Secretary, and in constant receipt of all the publications of this board. It is only recently that the township boards have begun to appreciate the advantages of this co-operation for mutual insurance against preventable disease and premature death.

The correspondence of these boards with your Secretary, from January, 1887, to October, 1888, is represented by 2,604 letters, to which 1,989 written answers were sent. To give an idea of the subjects of this correspondence,

989	letters referred to diseases of men,				
717	"	"	"	"	" horses,
221	"	"	"	"	" cattle,
11	"	"	"	"	" other domestic animals,
666	"	"	"	"	" general matters.

To these must be added correspondence with others than boards of health in, and outside, the State, but all relating to sanitary subjects, 1,096, making the total 3,085 letters written from our office since January 1st, 1887.

Of circulars, blanks, tracts on special diseases, on sanitary inspections, notifications of infectious diseases, there were mailed to, and for the use of, local boards 50,200, including 33,000 copies of PUBLIC HEALTH. The correspondence with

nearly 1,400 chairmen and health officers of local boards of Health and over 500 other people, has compelled an elaborate system of filing and classification to enable easy reference to any given letter; to the copy book answer thereto; to the other matter sent out to correspondents, and to enable the Secretary to keep informed to the latest moment, of the current work of each local board, and of this board.

#### THE RELATION OF THE STATE BOARD TO OTHER STATE BOARDS.

Very early in our history the introduction of infectious disease by immigration compelled this board to attempt some arrangement for co-operation in this respect, with other state authorities. We were unable to propose the matter formally till 1879 in Nashville, Tenn., when at a meeting of the American Public Health Association a hearing was obtained and our plan considered. It was thought by some to threaten the National Board of Health, by others the American Public Health Association, so that not much headway was made that year nor in 1880, except that our plan was printed and put in the hands of all interested; and the need for some arrangement was becoming greater. At the meeting of State Boards in Washington, I think in 1882, I was asked to suggest a plan for organization and did so, proposing a tentative undertaking till it could be seen just what we were able to do. It was accepted and adopted. The plan we outlined is sure to win but is obstructed by the legal inability of many boards to co-operate, and the carelessness of others. The re-organization of State Boards with powers of co-operation with each other in the control of infectious diseases of men and animals is now a conceded necessity, and the pressure therefor is increasing. Our Board is very fortunate in this respect and we have been able to further this great advance, in many ways.

It is a mistake to suppose that this co-operation extends only to so called infectious diseases, it must include others constantly more fatal to life, tuberculosis, typhoid fever and diarrhoeas of children, and a mutual system of disease classification, and for the study of disease causes. Though a new step in a wide field, this view of the matter is the accepted rule in Minnesota and we are working our way nearer to its accomplishment every day. I am confident that just in proportion as other states do the same thing, and thorough work replaces use-

less discussions and theoretical plans, will be the national advance in public health as a beneficent art rather than an attractive field for experiment and speculation.

In the control of infectious diseases we have just closed the local history of an outbreak of small pox in a country district, which illustrates very clearly the interdependence of a township board of health, and the government of another country, in the control of such diseases. On the 24th of August last a woman in the incubation stage of small pox, landed at Quebec from the steamer *Parisian* of the Allan Line. She passed the inspection at Remouski on the St. Lawrence River, and was not revaccinated. She went directly to the township of Wangs, Renville county and on September 1st, the eruption appeared. The disease was not suspected till September 5th, when nearly forty persons had been exposed. The Chairman telegraphed me, and searched for, found, isolated, and had vaccinated all exposed. The disease was confined to two adjacent families, with eight cases and three deaths. I visited the cases once and have had general direction, the local health officer of Sacred Heart, Dr. Welch, has been in direct charge. I have called the attention of the Canadian Government to the case and they are investigating the matter. A confusion of names threatened to prevent our obtaining the history of the patient before embarking, but that is corrected now, and the outbreak is likely to have a direct bearing on reform in the Canadian system. (See appendix I.)

Such cases prove our direct interest in seaboard methods with infectious diseases. The condition of the New York Quarantine of last year caused much indignation and the whole subject was again reviewed at the last meeting of the American Public Health Association in Milwaukee, in November. That discussion was provoked particularly by the outbreak of yellow fever in Florida. The disease came directly from Havana to Key West, thence to Tampa Bay, Jacksonville, to other Florida towns and to Alabama.

My large correspondence with the leading officials in direct charge, as also with representative health officers of other states, and of Canada, justifies the statement that the whole subject of interstate sanitary work will now receive a broader and more sensible consideration than ever before. In my address as President of the American Public Health Association at the Novem-



ber meeting in Milwaukee, I took the ground that as between properly organized State and Provincial Boards of Health a better understanding and co-operation is the imperative necessity of our work, of which no better proof could be quoted than the outbreak of small pox already referred to, but the greater need is mutual co-operation in united attack on the sanitary problems of common interest, and in notification, not only of disease, but of means for its better prevention or control.

*The responsibility for infectious diseases of domestic animals, including glanders, pleuro-pneumonia, tuberculosis, trichinosis, actinomycosis (lumpy jaw) belongs to the local and State Boards of Health, for the simple reason that those diseases are directly communicable to man or effect the healthfulness of cattle and hogs as human food, and particularly the milk of the cow. See details of this work in appendix to this report.)*

As to the details of the general work in Minnesota, I may best consider them under the classification adopted in our office.

*Organization and routine work of Local Boards of Health.* I have sufficiently described the organization. Upon a large map of the State a record is kept of each Local Board so that a glance locates the board and its quickest railroad or telegraphic communication; its geographic relation to other boards; to lakes and streams of water; to lines of immigrant travel and other facts capable of such exhibit. A roll is kept of the members of Local Boards of Health and their P. O. address, so that in emergency any one may be reached from our office or from other Local Boards. A list is also kept of the address of the chairmen and health officers who are the official representatives and executive officers of their boards, making regular and other reports and receiving PUBLIC HEALTH and all other publications of this board. Still another list kept gives names and addresses of town clerks who often serve as the correspondents of Township Boards, but whose special duty is the returns of births and deaths.

*The publications of the State Board, include:*

1. PUBLIC HEALTH IN MINNESOTA, an eight page monthly, giving statistics of births and deaths, for the preceding month. Statement of prevalence and mortality of specified diseases for the same time; editorial notices of current interest; correspondence. and reports.

2. Tracts on certain diseases; their recognition, prevention and control.

3. Monthly abstract of births and deaths.

4. A portion of the regular report on vital statistics of last and current year.

5. A large variety of forms and blanks necessary for the various reports to local boards and by them to this board.

These tracts and forms change as our knowledge and experience require, to keep pace with the more thorough work which well ordered practice enables the boards to do.

*Legal Questions.* A great variety are constantly arising. I have to acknowledge the advice of the Attorney-General for their solution.

*Infectious Diseases of Men.* Our knowledge of these comes in two ways, (1.) immediately by the prompt notification required by the law, (2.) by the monthly death returns. Take diphtheria for example. From December 1st, 1886, to December 1st, 1887, we received notice immediately of 583 cases, (144 deaths), in 100 localities and 46 counties, excluding Minneapolis, St. Paul, Stillwater, Winona and Duluth, while the deaths reported in the vital statistics were 788, i. e. a little over 14 per cent of deaths were reported immediately. Allowing for difference of time and other permissible deductions we may state that 23 per cent of the deaths from diphtheria were reported immediately in 1887, but as it was notice of the occurrence of the disease, rather than of its mortality, which is required, it is evident that a larger proportion of outbreaks were reported. A very fair exhibit for the first year of thorough trial. In 1888 to the first of October there have been reported immediately 559 cases, (213 deaths), in 142 localities and 52 counties. By the vital statistics to same date, (8 months), there were reported 213, deaths.

MEASLES, DIPHTHERIA, SCARLATINA, TYPHOID FEVER, CROUP,  
DIARRHŒAL DISEASES OF CHILDREN.

The following table shows for 1887 the relative distribution of certain diseases in counties and localities, with the number of deaths from each in Township, Villages and Cities. It will be understood that these figures are taken from my report on Vital Statistics and are founded on reports of death and sickness. Among other results it shows the mortality from *Typhoid Fever* to have been nearly twice as great in Villages and Cities as in Townships. The mortality from *Diphtheria* on the contrary, was larger in Townships than in Cities and Villages. The mortality from *Scarlatina*

in Townships was about three-fourths that of Villages and Cities, and for *Measles* about one-half. The fuller details will be found in the Report on Vital Statistics.

	No. of Counties Invaded.	No. of Counties not Invaded.	No. of Localities Invaded.	NO. OF DEATHS IN			Total Deaths.
				Townships.	Villages.	Cities.	
<i>Measles</i> .....	34	42	68	62	13	110	185
<i>Scarlatina</i> .....	37	39	82	76	20	90	186
<i>Diphtheria</i> .....	60	16	208	434	51	303	788
<i>Croup</i> .....	52	34	105	107	33	143	283
<i>Typhoid Fever</i> .....	67	9	223	244	63	410	717
<i>Diarrhœal Dis. of Ch ldren</i> .....	69	7	333	355	98	736	1,189
<i>Phthisis</i> .....	74	2	450	563	69	493	1,125
<i>Bronchitis</i> .....	61	15	180	164	29	155	348
<i>Pneumonia</i> .....	64	12	270	277	57	285	619

The age of greatest mortality from these diseases was in 1887:

<i>Measles</i> , under 5 years .....	79.51	per cent. of that disease.
<i>Scarlatina</i> , " " " .....	85.25	" " "
<i>Diphtheria</i> , from 5 to 15 years .....	49.49	" " "
<i>Croup</i> , under 5 years .....	83.18	" " "
<i>Typhoid Fever</i> , from 15 to 30 years .....	54.81	" " "
<i>Diarrhœal Dis. of Children</i> , under 1 yr. ..	85.71	" " "
<i>Phthisis</i> , from 20 to 40 years .....	54.75	" " "
<i>Bronchitis</i> , under 5 years .....	74.71	" " "
<i>Pneumonia</i> , under 5 years .....	45.55	" " "

*Leprosy*—We were very fortunate last summer in the visit of Dr. G. Armauer Hanson, Chief of the Leper service of Norway, and the discoverer of the bacillus of that disease. He came for the purpose of studying the effects of change of climate and habits upon lepers and their descendants, who were known to have come to the Northwest. After a careful study of every known case of the disease, and of large numbers of the children, grandchildren and great-grandchildren of lepers, he was unable to find a single case which originated here and so expressed the opinion that there was no danger of a spread of the disease here. (See page 39, Vol. IV, of PUBLIC HEALTH, attached to this report.) We shall keep up our records of the disease, and an oversight of all cases known to be in the State, hereafter as heretofore.

*Other Diseases of Men.* A glance at the tables and diagrams herewith submitted shows only too plainly that it is this class of diseases which cause the large part of our sickness and death rate. Among them are two classes of causes which must be more carefully studied hereafter than heretofore. I mean the



*causes of tuberculosis and of the diarrhæas, particularly the series we class as cholera infantum.* The enormous general mortality under five years, and under one year, from infantile debility, demand a serious and systematic study. I am so impressed with the importance of this matter that I have asked the American Public Health Association to arrange for a careful report on the subject, and I hope to lay the foundation for some co-operative work between state boards in this direction. My own study inclines me to believe that we do not look closely enough, for causes at work *in and around the homes* of the population. The marked results of the sanitary control of public institutions upon the occurrence of disease, its character and mortality, ought to teach a very practical lesson. The English experience in this regard is very remarkable, and the systematic study of American institutions, which I propose to have made, will, I doubt not, show the same thing.

*Sanitary Inspections and Work.* The reports in PUBLIC HEALTH for the last two years have given a notion of the work of local boards in this direction. Some of the local boards have made the spring inspection the foundation for the work it showed ought to be done, but there are others who seem to follow the popular example and "wait for something to turn up," when they exhibit an excess of activity which seems to act as a sort of "make up" for previous neglect. There is less of this than heretofore, and will be very little if we can get such legislation as will properly compensate health officers for service, and enable local boards to incur necessary expense. Now county boards act as boards of revision, and not unfrequently refuse bills incurred in emergency for the control of infectious disease.

*Water Supply, Sewers, Pollution of Streams, Removal of Privies and Cesspools, Disposal of Garbage.* There has been marked increase of movement in these directions of which the details will be found in PUBLIC HEALTH (which see). Recently I was called to Faribault at the request of the citizens who had objected to the order of the local board against "holes in the ground." A large and representative audience of the first citizens, ladies and gentlemen, met me at the opera house and having heard an uncompromising statement of the truth of the matter gave a hearty vote of thanks and seemed disposed to join hands with their local board, to make Faribault as healthy as it is beautiful. A little later I went to Duluth at the request of



the Chamber of Commerce, spent a day looking up the evidence of typhoid fever there, with Dr. Sherwin, Health Officer, and addressed the chamber in the evening. Having been invited to go up again, and after a conference with the authorities, I addressed a meeting of Council, Chamber and people.

*Offensive Trades, Public Water Supply.* The law giving this and the local boards control of offensive trades was supplemented by another, giving this Board charge of the public water supply of the State. (Chapter 225 Laws 1885.) A reference to the acts will enable you to see the difficulty in dealing with the large industries around our large cities and the importance of the step you took two years ago with respect to the matter. As soon as the Attorney-General advises us we shall know what further legislation, if any, is needed to protect the streams used for water supply. The appeal of the Rochester Board of Health against the use of Silver Creek for a sewer is in point. (See Appendix.)

*Slaughter Houses, Milk Supply:* Many local boards have regulated the slaughter of animals, and Winona has an abattoir. The advantage of this control can be greatly increased if local boards will enforce the inspection of milk and meat as a sanitary necessity for the discovery of possible causes of sickness, in the various dilutions, impurities and admixtures, to which milk is exposed, and the infection of which meat is the convicted, occasional, carrier. Both are now suffering from, probably, an exaggerated charge of unhealthfulness, which if it have no other effect will increase enormously the consumption of the infinite variety of artificial foods.

*The Adullerations of Foods* are constantly being brought to our notice and I respectfully urge a repetition of your request in the last report, as follows:

*"Food Adulleration.*—We have for successive years asked a simple but comprehensive act, that all imitations, dilutions, or adulterations of food products, should bear, marked plainly on the package, an exact statement of the fact, and that some authority in the State should be designated to determine the standards of purity for food products, and define what shall be legally meant by imitation, dilution, or adulteration, if the legislature does not define them in the act. We call attention of the legislature to the general law on that subject in Massachusetts, of 1882, 263 § 1, of 1884; 289, 7, of Public Statutes of Massachusetts,

Chap. 208, § 6, of 1886, 318, § 1, as examples of successful legislation in this direction. With our extended system of Local Boards of Health, the collection and verification of samples of suspected articles could be easily and inexpensively done, and the analyses made under the direction of the State Board of Health, as in Massachusetts. Sections 331, 347, of the Minnesota Penal Code, already provide to some extent for the sale of imitations of food, and adulterated and diluted milk, but do not put the responsibility for looking after such matters where it properly belongs, as seriously affecting health, on the State and Local Boards of Health.

The matter is of so much importance that we respectfully ask such legislation as the wisdom of the legislature may determine.

One of the most serious problems before the local boards and the State Boards is the pollution of soil, air and water by human and animal excreta and the organic and inorganic refuse of centers of business and offensive trades. Even in cities where there is a public water supply, but a small proportion of the population use it for domestic purposes. Not nearly as many villages and cities have a sewer system, and when it exists its use is less frequent than the public water supply. There is no sewer system in use in this state which does not deliver its contents into a running stream. No systematic effort has yet been made for any other mode of disposal. With the exception of two or three cities, running streams afford the source of the public water supply and in some of the exceptions it is not unlikely that a part or the whole of the water comes from an adjacent stream; hence, if there was no other reason this is sufficient to justify a general law forbidding the entrance of sewage into streams or other source of water supply. The magnificent success at Pullman, Ill., both financially and sanitarily is an example worthy of study and imitation by St. Paul, Minneapolis, or any other city disposing of its sewage in the old way.

*Garbage*—Nearly all the garbage of Minneapolis and St. Paul is dumped into the Mississippi River. A garbage furnace has been erected in Minneapolis under the direction of the health officer, Dr. S. S. Kilvington, from which good results are expected. It has not been in use a sufficient length of time to determine its capacity or the expense of its maintenance. There is one general principle which should decide questions as to the disposal of garbage. It is, that such matter should be immedi-

ately removed from centers of population and disposed of in such a way as not to threaten the safety of other populations. For villages and the smaller cities a system of regular scavenger service, with burial, preferably upon agricultural land, is simple and practicable. This includes, of course, the disposal of manure and night soil. For the large cities, this method does not seem wholly practicable, and various methods of destruction by fire in furnaces have been resorted to. The experiments now in progress are in such variety and number that a conclusion, as to the best method, will be possible within a few months. Economy in the expense of such furnaces and the commercial use of their products, are important and desirable ends, but, of course, secondary to the first object, which is the promptest and safest destruction.

The concentration of great slaughtering, rendering, and other establishments dealing with various commercial forms of organic matter are liable to create nuisance and pollute air and water supply by their methods and products. The necessity is increasing in our state for their systematic supervision and control as respects their influence upon the health of the population. Time is rapidly passing when these dangers can be prevented or lessened with minimum of trouble to the manufacturer, and the minimum of trouble and expense to the locality, or the State.

This Board have repeatedly called attention to these facts, and it will not be our fault if the experience of Massachusetts, New York and Illinois, in the regulation of these industries, is repeated.

We have repeatedly urged, that it is easier, simpler, safer, more economical, and more just to all concerned, to settle the sanitary demands to be made upon these industries before their establishment, in the interests of public health, than to wait the investments of large sums of money in extensive plants for such work, before making regulations with respect to them. This is exactly what the states above referred to did not do, and the result has been irritation, delay, expense, and far from satisfactory results.

*Laboratory.*—The work here has about kept pace with the demand, though some delay has been occasioned by necessary changes, and by the unusual volume of other work. About 150 analyses and opinions have been given, of which a large proportion was as to character of the public water supplies of towns,



villages and cities; the balance were those of individual sample suspected of having to do with the causation of sickness, most which were forwarded by the local boards of health. As the number of analyses increases year by year, we are approaching a standard of mineral elements, particularly chlorine, for the different sections of the State, which will make the easy discovery of dangerous impurities more certain. The processes for the detection of nitrogenous matter, as ammonia, are still too delicate for use outside of a laboratory, but the detection and estimation of chlorine is very simple.

*Micro-Biological Investigations.*—The prevention and control of infectious diseases, both of men and animals, and the biological study of water have compelled provision for such investigation in our laboratory. The apparatus which you directed me to procure, has recently arrived, and is now set up and ready for operation. The pathological work which I have begun in co-operation with the Bureau of Animal Industry has already developed one cause of a considerable mortality among cattle not hitherto described in this section of the country—malignant catarrh—and put us upon the track of the probable discovery of its cause. The results have enabled us to suggest means for the suppression of that disease which have been largely successful.

*Glanders*, which has prevailed very extensively among horses (See Report on Infectious Diseases Among Animals in Appendix), has been communicated to man in several instances in Minnesota, three of which are authenticated. In other states men have suffered even more than with us. Infection generally comes from horses not known to have glanders. It is, therefore, very important that a certain diagnosis should be made as quick as possible. The best way known at present is the inoculation of virus from a suspected horse upon one of the lower animals, and the development of the virus by way of culture in the laboratory. We are nearly ready to undertake this mode of investigation and hope in this way to increase safety and diminish the duration and expense of the isolation of suspected animals.

*Tuberculosis.*—This disease has been several times reported and has destroyed some of our best cattle. One striking example: a pure-blood Jersey, was suspected of pluro-pneumonia, but a post-mortem examination showed both lungs so infiltrated with tubercle that, when they arrived at the laboratory, their weight was thirty-nine pounds. The better organization and experience

of the Local and the State Boards the discovery of infectious diseases of men and animals enable us to make a more thorough search for tuberculosis the coming year than heretofore. I have arranged for the co-operation of the Bureau of Animal Industry in this and other investigations, and our increased laboratory facilities will enable us to do our share of the work here.

It is proper to state that the laboratory in all its departments is so great an assistance to me in my work that I have divided the payment of the current expense with the Board by furnishing the building which it occupies, and by doing a good deal of the work evenings and at other times without interfering with my other duties.

*Library.*—The library is slowly growing by the addition of standard works upon sanitary subjects, and bound files of the leading sanitary journals. With it and the facilities of our laboratory we can now afford to health officers practical instructions in water analysis, the use of the microscope and methods of bacteriological work which it is to be hoped they will avail themselves of, as several have expressed their intention to do.

*Legislation required.*—I suggest a repetition of your recommendation in your last report for legislation as follows:

*“Legislation for Township Boards.*—We suggest to the Legislature that the law respecting the organization of Town Boards of Supervisors be changed, so that the Board shall be elected, “One member to hold office for the term of three (3) years, one “for two (2) years, one for one (1) year and one member of such “Board shall be so elected annually thereafter, and all vacancies “occurring in such Board shall be filled in like manner.”

This is the method followed for other local administrative organizations, and is the only way to secure a continuous and efficient executive body, familiar with the routine of its duties; and able to accumulate experience, and gain facility in practice, as time goes on. Records will then be continuous, and of value for reference and use; now, nearly all these advantages are lost, and in March of each year a new body *begins* work, when it should properly continue it, with enough of the old membership to give it stability and familiarity with duties and methods.”

*Popular Conferences with State and Local Boards of Health.*—Three of these conferences have been held since the last report—one at St. Paul, another at Northfield, and the last at Rochester. The attendance and interest manifested has been

very encouraging. The one at Rochester was attended by nearly a hundred representatives of local boards. The sessions continued three days, with two large popular gatherings, on the evenings of the first and second day. Many valuable papers were read, discussions were lively and practical, and the interest amounted to enthusiasm. These conferences have become a necessity in the work of the Local and State Boards, and the place meeting, so far as practicable, has been determined by the sanitary advantage to the locality, which such meetings have proven to be. The meetings in Northfield and Rochester, particularly, strengthened the work of the Local Boards.

*The Financial Statement's* will be found in the appendix to this report.

We have not exceeded our appropriations but a part of the expense of the Vital Statistics has been carried by the State Board of Health Fund. I have gotten along without an assistant in the Laboratories for the last year, but shall need one hereafter. He can be paid out of the current appropriation as there will not be much more apparatus required. That has been purchased out of last year's fund by my doing an assistant's work myself.

My report has been longer than I intended, yet has only sketched the work done by, and under the direction of this Board. I respectfully refer to the additional papers in the appendix in this statement; to the volumes of PUBLIC HEALTH IN MINNESOTA; and to the Vital Statistics of the State; also appended for further details.

Taken altogether they are a fair exhibit of the progress of Public Health in Minnesota, and of the substantial growth of our organized work. You can safely count on still further advance if our present organization, with the changes herein suggested, in the laws, are given time and opportunity for the development so vigorously and efficiently begun.

This report covers work done up to October 1st, 1888.

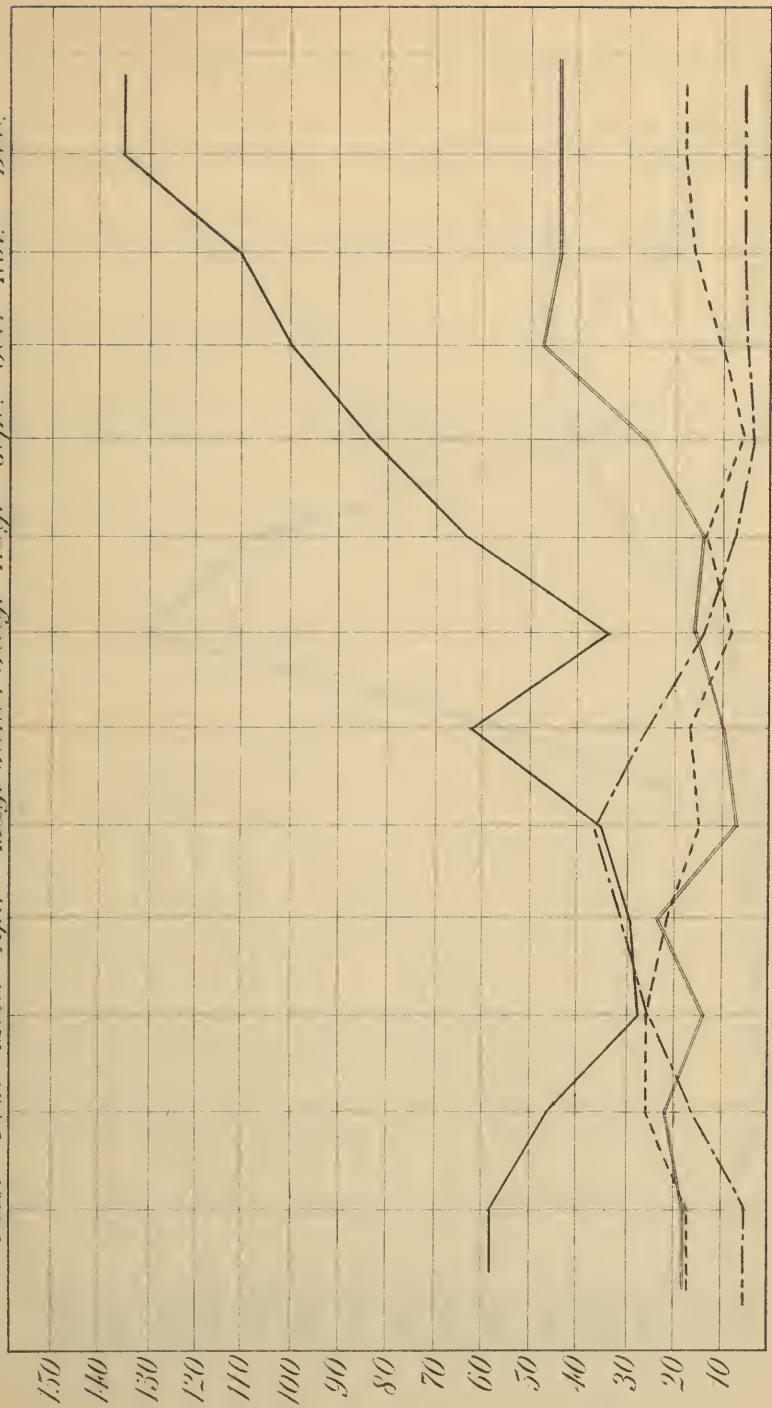
CHARLES N. HEWITT, M. D.,

Secretary and Executive Officer.

Red Wing, Dec. 27th, 1888.

# DIAGRAM SHOWING MORTALITY BY MONTHS FROM SCARLATINA, DIPHTHERIA, CROUP & MEASLES IN 1887.

Jan. Feb. March. April. May. June. July. Aug. Sept. Oct. Nov. Dec.

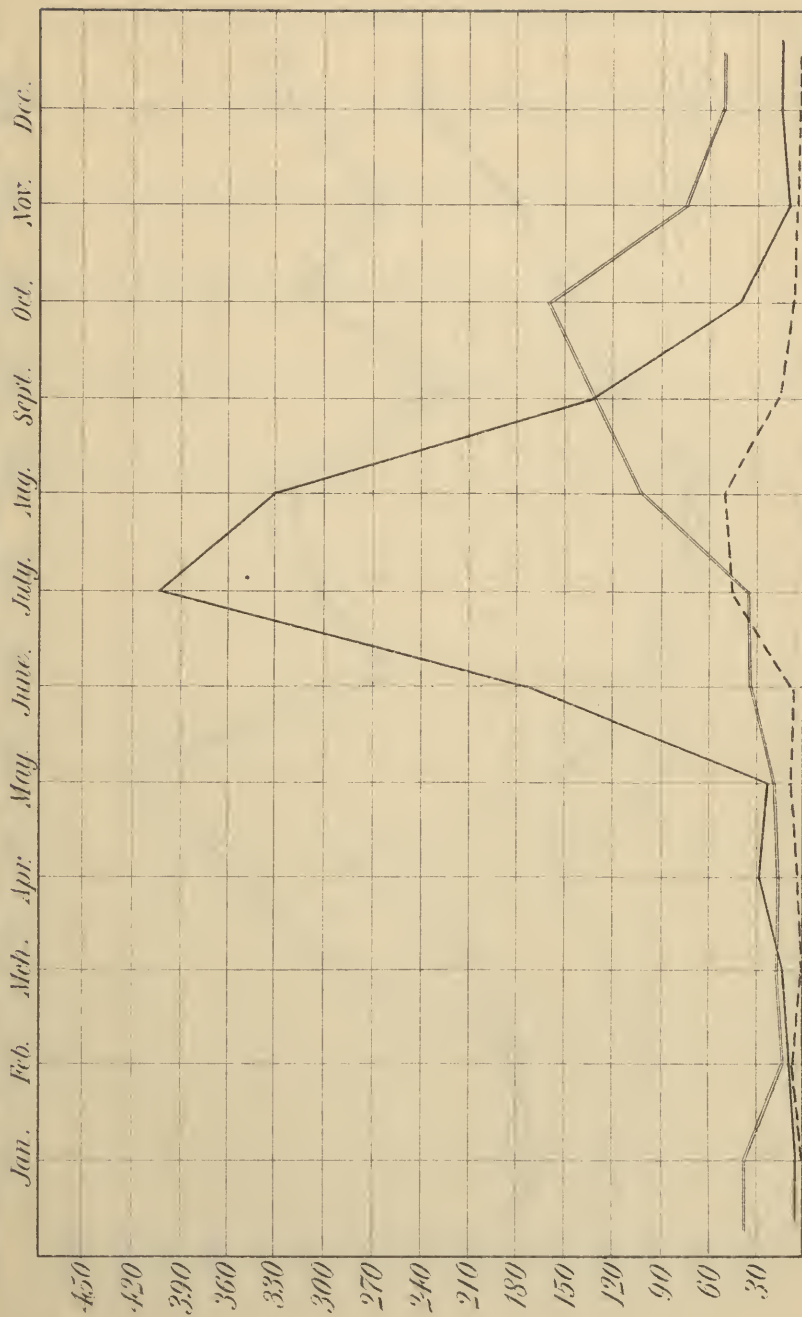


Scarlatina-----Total 196. Diphtheria---Total 788. Croup——Total 283. Measles----Total 185.





DIAGRAM SHOWING MORTALITY BY MONTHS FROM TYPHOID FEVER, DIARRHOEAL DIS. OVER 5 YRS., & DIARRHOEAL DIS. OF INFANCY IN 1887.



Typhoid Fever—Total 717. Diarrhoeal Dis. over 5 Yrs.—Total 134. Diarrhoeal Dis. of Infancy—Total 1189.



DIAGRAM SHOWING MORTALITY BY MONTHS FROM PHTHISIS, BRONCHITIS & PNEUMONIA IN 1887.

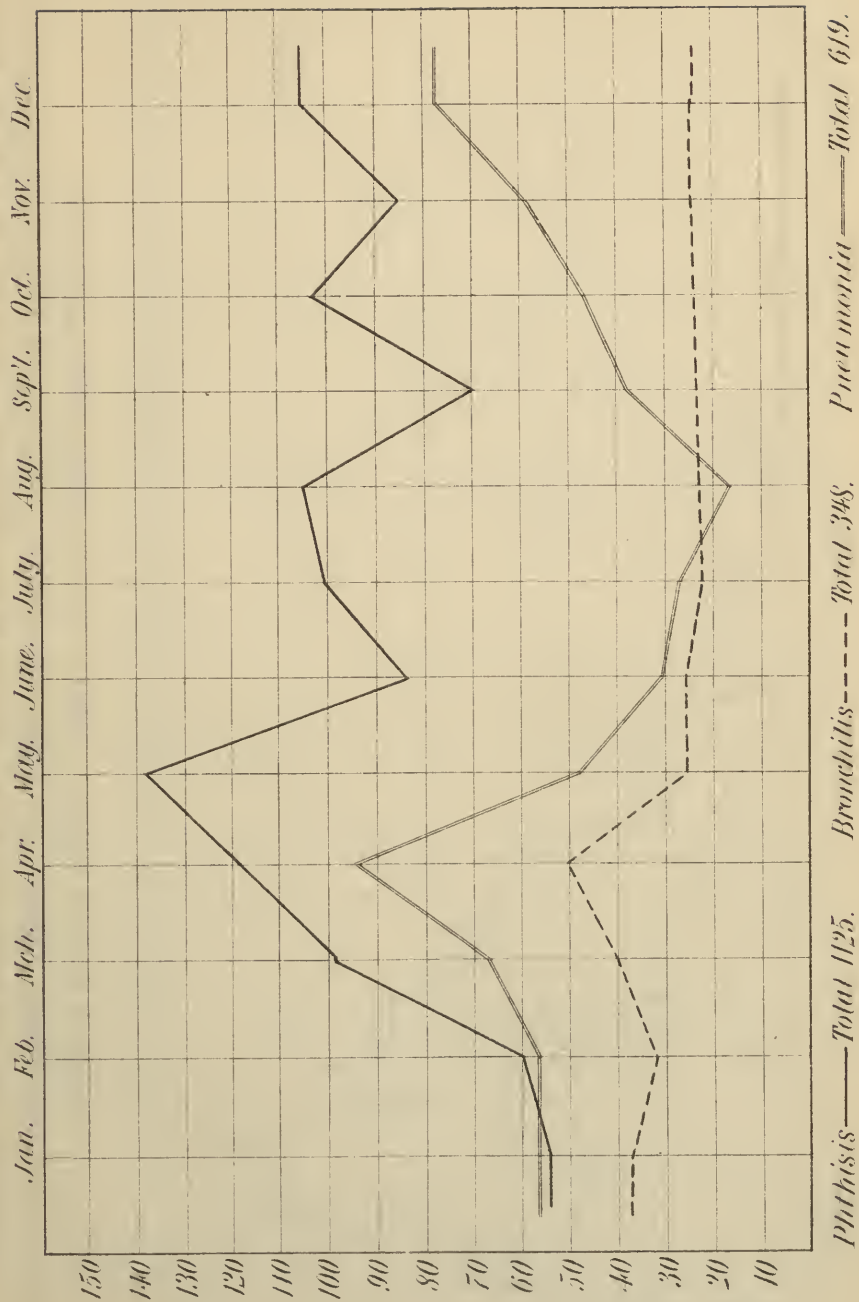
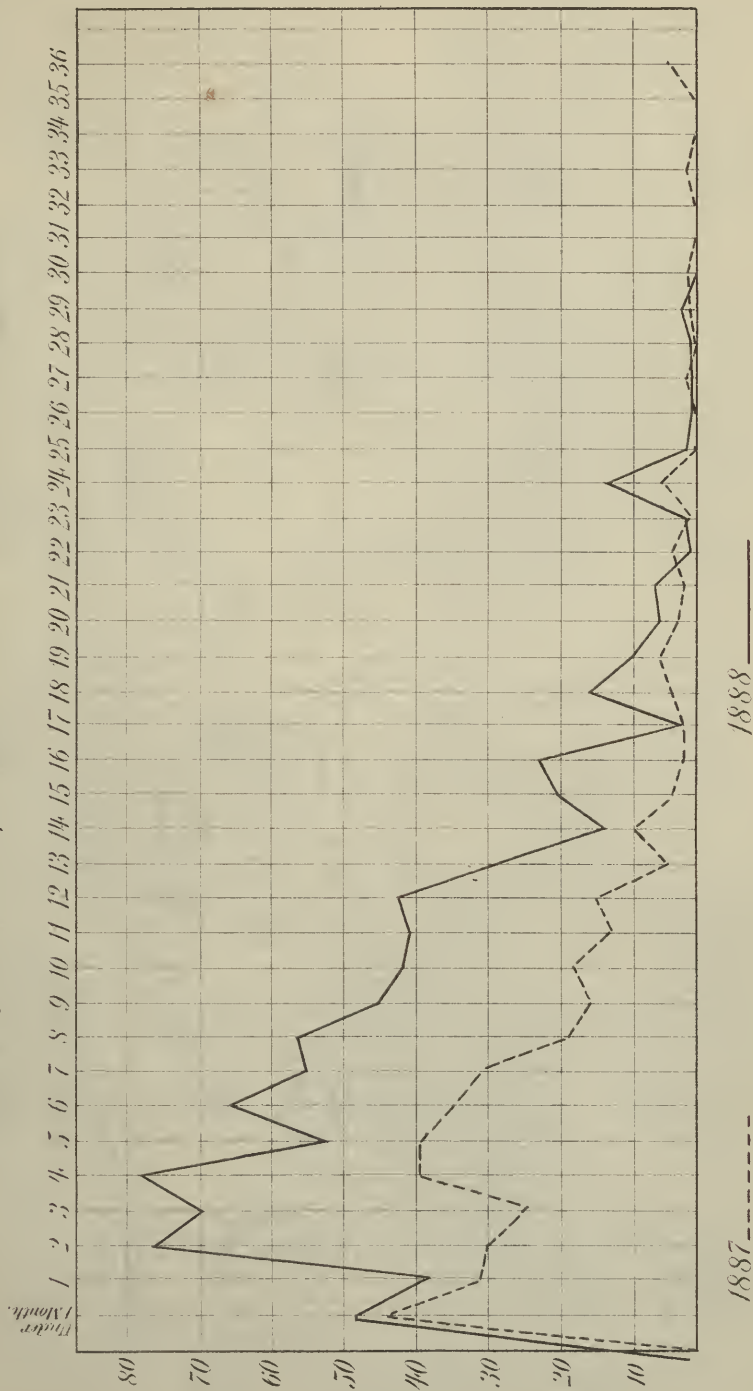




DIAGRAM SHOWING INFANT MORTALITY BY MONTHS UNDER 3 YRS OF AGE BASED ON 472 DEATHS  
IN 1887 & 879 IN 1888, OF WHICH THESE FACTS ARE RECORDED.





# APPENDIX TO SECRETARYS REPORT.

## CORRESPONDENCE WITH THE DOMINION GOVERNMENT AS TO A CASE OF SMALL POX.

NOVEMBER 7, 1888.

*To the Honorable the Minister of Agriculture, Ottawa, Dominion of Canada—*

SIR: When I had the honor of a conversation with you in August (with Dr. John Coventry, Medical Health Officer of Windsor). I did not think that an illustration of the subject we were discussing, would so soon occur. But the correspondence which Dr. Montizambert, your quarantine officer at Grosse Isle, has submitted to you shows that what we thought *might* happen was, at that very time, happening.

A woman infected with small pox passed inspection at Rimouski, landed at Quebec, August 24th, came to a remote township in Minnesota, sickened about September 2d, exposed about forty other people before the disease was recognized, and to date there have been seven (7) cases and three (3) deaths, including the woman herself among the sick. I venture to hope that your officers will be able to get the *locality, character* and *date* of the infection in this case, bearing so directly on the question of the precautions which should be taken before permitting persons or things to enter ships for this side without a clear history of freedom from the infection of a disease, whose incubation is long enough to enable the victim to get to the remotest inhabited locality in Canada or the United States, before the disease declares itself.

It is rare that so clear an illustration occurs of the necessity for more stringent regulations at *foreign ports* to protect the populations on this side the Atlantic.

The possibility that such importation may be, as in this case, into districts, not on the lookout for the attack, is a very serious feature of the danger—because infection may spread widely from such an outbreak before its very existence is discovered.

I should have sent the correspondence directly to you, but I had forgotten, for the moment, that your quarantine system is not a unit under one head, a quarantine officer responsible to the minister for the unity and efficiency of the whole service, and wrote to Dr. Montizambert under the impression that all immigrant inspection, on the St. Lawrence, was done by him. May the importance of the matter be a sufficient excuse for my venturing to trouble you, and may I express the hope that this investigation and a renewed study of the best methods of preventing and controlling epidemic disease at the seacoast, may result in giving to Canada the best system on the continent.

With sincere respect, I beg to remain yours respectfully,

(Signed)

CHARLES N. HEWITT, M. D.,

Sec. Minn. State Bd of Health and Pres. Amer. Pub. Health Ass'n.

OTTAWA, 10th November, 1888.

SIR: I have to acknowledge your letter of the 7th instant, on the subject of the St. Lawrence quarantine regulations, and in reply to inform you that the representations in your letter will receive careful consideration, with a view to prevent the recurrence of a case, such as that which you describe.

I have the honor to be, Sir, your obedient servant,

(Signed)

J. LOWE,

Deputy Minister of Agriculture.

Charles N. Hewitt, Esq., M. D., Sec'y of the State Board of Health and Pres. of the Am.

P. H. Ass'n., Red Wing, Minn.



OTTAWA, 5th Dec., 1888.

SIR: Adverting to the correspondence with you on the subject of a case of small pox, alleged to have been conveyed to Minnesota in the person of a woman said to have arrived by the "Parisian" during the month of August last. I think it well further to say that a correspondence was entered into by this Department with the Allan Line on this subject.

The name of the woman, as given to the Department by Dr. Montizambert, the medical superintendent at Grosse Isle, was Jette Mathiasdatter, but respecting this Messrs. H. & A. Atlan wrote to say that they had no such name on their list of passengers by the "Parisian," during the month of August, last. This matter was referred to Dr. Montizambert, who made an explanation in a letter (a copy of which I inclose herewith), which was communicated to the Messrs. Allan.

They again replied that they were still unable, by the information furnished, to trace the passenger upon the name given. It is, therefore, in the circumstances, requested that you will furnish to the Department such information as would prove that the woman in question came by the "Parisian."

I have the honor to be, Sir, your obedient servant,

[Signed]

J. LOWE,

Dep. M. A.

C. N. Hewitt, Esq., M. D., Sec'y State B'd of Health, Red Wing, Minn.

DECEMBER 15, 1888.

HON. J. LOWE, *Minister of Agriculture, Ottawa, Canada*—

DEAR SIR: I beg leave to submit at the earliest possible moment, herewith inclosed, a copy of a letter from the agents of the Allan Line, who sold the ticket to the woman in question, and to whom she reported on arriving in this country. I trust that this will be the means of absolute identification, as it settles the fact of her arrival on the "Parisian," August 24th, and gives her number. The company have no more excuse for delay in accounting for the exposure.

Respectfully,

(Signed)

CHARLES N. HEWITT, M. D.,

Sec'y State B'd of Health.

(Inclosure.)

SCANDIA BANK OF MINNEAPOLIS. }

MINNEAPOLIS, Dec. 14, 1888. }

CHAS. N. HEWITT, ESQ., M. D., *Sec. B. of H., Red Wing, Minn.*—

DEAR SIR: Referring to the inclosed received in your favor of the 12th inst. The full name of the passenger referred to is Jette Mathiasdatter Sylstad, and number of her ocean ticket issued here was 27,611. Arrived Quebec in "Parisian," August 24th, 1888.

Trusting that the above is satisfactory, I am yours truly,

(Signed)

A. C. HAUGAN,

Cashier.



## A NOTE ON THE CAUSES OF MORTALITY UNDER FIVE YEARS OF AGE. STATISTICS OF 1887.

Total deaths classified, 13,010. Total under 5 years, 5,920; 45.46 per cent.

### *Deaths of the (zymotic) miasmatic class:*

Measles,	73.51	per cent. of all deaths from that cause.				
Scarlatina,	67.25	"	"	"	"	"
Diphtheria,	42.89	"	"	"	"	"
Croup,	83.18	"	"	"	"	"
Pertussis,	94.64	"	"	"	"	"
Typhoid Fever,	6.13	"	"	"	"	"
Total of this class,	42.22	"	"	"	"	class.

*Diarrhœal Diseases,* 94.1 " " " " "

### *Constitutional Diseases:*

Phthisis, 3.82 per cent. of all deaths from that cause.  
Other Tubercular Diseases, 56.66 per cent. of all deaths from that cause.

### *Developmental Diseases:*

Premature Birth, 13.7 deaths.  
Infantile Debility, 11.36 deaths from that cause of which 10.89 were under 1 year of age.  
Still Births, 569 deaths.

### *Nervous System:*

Meningitis, (including Cerebro Spinal) 61.26 per cent. of all deaths from that cause.  
Infantile Convulsions, 491 deaths, of which 401 were under 1 year of age.

### *Respiratory Organs:*

Bronchitis, 74.71 per cent. of all deaths from this cause; more than one-half under 1 year old.  
Pneumonia, 45.55 per cent. of all deaths from this cause; more than one-half under 1 year old.

*Violence:* 16.78 per cent. of all deaths from this cause; one-half under 1 year old.

*Ill-defined and Unspecified:* 129 deaths; 23.28 per cent. of all deaths from this cause.

## SUMMARY.

CLASS.	Total deaths.	Per cent. of de'ths under 1 year to total deaths.	Per cent. of de'ths under 5 years to total deaths.
Miasmatic .....	2,245	10.69	42.22
Diarrhœal .....	1,323	75.05	94.1
Constitutional .....	1,604	3.42	8.7
Developmental.....	2,785	66.85	97.43
Nervous System.....	1,311	43.7	64.09
Respiratory Organs.....	992	32.56	55.04
Violence.....	679	9.86	16.78
Ill-defined and Not specified.....	554	5.41	23.28

I am unable to state infant mortality by months for 1887, not having the returns classified in that way on account of lack of help and time, but the monthly statements of deaths published in PUBLIC HEALTH since January 1888, enable such a statement. It must be understood that the monthly reports made during the succeeding month do not include all the deaths which will be registered for preceeding month by the close of the year. This fact however, does not diminish the value of the returns for our present purpose, but only the total number available therefor.

TABLE SHOWING MORTALITY BY YEARS, UNDER 5 YEARS OF AGE BY MONTHS, FOR 9 MONTHS OF 1888.

	Jan.	Feb.	Mch.	April	May	June	July	Aug.	Sept.
Total deaths of all ages.....	998	1,055	1,188	1,076	1,100	925	1,013	1,216	1,052
Under 1 year.....									
Males.....	146	176	209	210	180	162	241	294	210
Females.....	99	105	167	126	120	120	183	224	163
1 to 2 years.....									
Males.....	29	27	34	48	41	30	46	64	46
Females.....	25	25	43	29	34	30	37	65	46
2 to 3 years.....									
Males.....	11	17	26	21	24	15	21	19	11
Females.....	19	16	13	22	16	11	10	16	16
3 to 4 years.....									
Males.....	13	16	21	10	13	13	3	6	12
Females.....	13	8	11	9	16	15	10	12	7
4 to 5 years.....									
Males.....	16	10	12	10	8	5	10	9	9
Females.....	13	11	16	9	13	6	4	6	9
Under 5 years.....									
Males.....	215	246	302	290	266	225	321	392	288
Females.....	169	165	240	192	195	182	244	323	246
Per cent. under 5									
Males.....	21.5	23.3	25.4	27.7	24.1	24.3	31.6	32.2	27.3
Females.....	16.9	15.6	20.2	18.1	10.9	19.6	24.08	26.5	23.3
Per ct. under 1 year									
Males.....	14.6	16.6	17.5	19.5	16.3	17.5	23.7	24.2	19.9
Females.....	9.9	9.9	14.05	11.7	10.9	12.9	18.06	18.4	15.9
Per ct. under 1 yr. to total under 5 yrs..	70.1	70.01	69.3	68.	64.5	69.3	75.	72.4	70.8

## STATISTICS OF DEATHS AT SCHOOL-GOING AGE.

The question has repeatedly arisen as to the character and mortality of the sickness effecting children of the school-going age. I assume that the limits of that age are between 5 and 20 years. The large majority, of course, at least  $\frac{1}{10}$ , are between 5 and 15 years old. We have no statistics, or any extensive observation, of the character of the sickness or of the sickness rate, or of disability sufficient to unfit for school work, not classifiable as specific disease. These data are essential to an exhaustive study of the question.

The following facts will throw some light upon the subject. For reasons which will appear later, divide this age into 3 periods, 5 to 10, 10 to 15 and 15 to 20:

Total deaths between	5 and 10 years,	(692),	5.3	per cent. of all deaths.
"	"	"	10	" 15 " (373), 2.87 " " "
"	"	"	15	" 20 " (543), 4.17 " " "

The leading causes of mortality between 5 and 10 years were classed as miasmatic diseases. There were 431, 62.28 per cent. of all deaths at this period. Subdividing them by specific disease cause, we find that diphtheria is responsible for the deaths of 114 boys and 167 girls, total 371, equal to 86.07 per cent. of deaths from miasmatic diseases at this age, or 53.6 per cent. of the total deaths between 5 and 10 years from all causes. No other disease figures in any thing like this proportion, Scarlatina comes next, with but 46 deaths; Typhoid Fever, with 42; Croup, 34; Measles, 30. No other diseases make any figure.

Taking the next period from 10 to 15 years, there were but 373 deaths. The principle cause of mortality is still found among the miasmatic class, 198 deaths between these ages, 72.5 per cent. of deaths from all cause in this period. Diphtheria is still the principal cause, 58 boys and 49 girls, total 107; 28.6 per cent. of all deaths at this age, showing a rapid decline in the mortality as compared with the last period, (54 per cent. of all deaths from the miasmatic class between 5 and 10.) Typhoid Fever continues and increases, the record began in the last period, 33 boys, 34 girls, total 67. 33.8 per cent. of deaths from miasmatic class at this age, or 17.9 per cent. of total deaths at this age from all causes.

Taking the next period, 15 to 20 years, the total of deaths was 542, almost double that from 10 to 15 years. Here for the first time the miasmatic class is the minority of cause, there having been 164 deaths, 57 boys and 56 girls, from that class at these ages; 30.2 per cent. of all deaths between these ages. Diphtheria occasioned but 25 deaths, 15.2 per cent., of the deaths from the miasmatic class at these ages; while Typhoid Fever, occasioned 119 deaths, 63 boys, 56 girls, 72.5 per cent. For the first time one of the other classes of diseases causes a large proportion of the mortality, diseases constitutional, 163; 30.2 per cent. of all deaths at these ages, (about the same as the Miasmatic class.) of which 147, 42 boys, 105 girls, were occasioned by Phthisis; 27.1 per cent. of all deaths at this age; 90.1 percent. of all deaths at this age of this class. Diseases of the nervous system, to which the children of school-going age are supposed to be particularly liable, caused 51 deaths between 5 and 10 years: 24 between 10 and 15 years; 37 between 15 and 20 years. Diseases of the Respiratory Organs are accountable for but a small mortality, 5 to 10, 44; 10 to 15, 14; 15 to 20, 36. Diseases of the Digestive Organs still smaller, being respectively 20, 22 and 21. I should have given the data for Constitutional Diseases, which were for the periods named, 31, 41 and 163, a very rapid increase, while for the miasmatic class, the record stands 431, 198, 464. Anyone interested in the matter will find abundant material for similar study on pps. 29 31, report on Vital Statistics. See also the diagrams following this note.

## DISEASES OF DOMESTIC ANIMALS.

1887—1888.

## GENERAL SUMMARY.

Those with which we have had to deal since last report (Nov. 1, '86), are—  
 OF THE HORSE AND MULE. *Glanders and Farcy*, (varieties of the same disease), *Epidemic Influenza* and *Strangles*.

OF CATTLE. Outside the State *Pleuro-Pneumonia*; in our own herds, so-called *Black Leg*, *Malignant Catarrh*, *Tuberculosis*.

OF HOGS. *Hog Cholera* and *Trichinosis*.

OTHER DISEASES OF HORSES AND CATTLE AND SHEEP. Poisoning by some irritating vegetable in swampy pastures. Sickness traceable to improper and insufficient food, crowded and ill-ventilated stables, sudden changes of temperature in winter.

DISEASES OF HORSES. *Glanders* (See Special Report, following.) *Irregular Strangles*—Reported August 1st, '88, among 50 horses in one pasture, in Iona Tp., Murray county. Telegraphed Chairman Local Board of Health to isolate and employ competent V. S. He telegraphed for V. S. and I sent Dr. Standish, of Mankato. He found 13 cases abscesses of maxillary space, and elsewhere on the body, and nasal discharge. Sick separated from the well, and the disease disappeared.

*Epidemic Influenza*, or catarrhal fever, in livery stable at Howard Lake, commonly called Pink Eye. Standard authorities are in doubt as to the necessity of quarantine, but I approved the suggestion of the Health Officer that it had better be done. No further trouble.

DISEASES OF CATTLE. *Malignant Catarrh* (See special report, Appendix No. —). Dec. 20, '86, an outbreak suspected to be *Pleuro-Pneumonia*, occurred in herd owned by F. Ahrens, Havana Tp., Steele Co. Dr. Davis, member of the State Board of Health, and a veterinary surgeon, visited the farm, and found no cattle sick. June 14, '87, I visited the farm on a second complaint, and found a sick cow. An examination of the lungs developed no serious disease. The symptoms seemed to me those of simple catarrh. I saw subsequently another pair from the same herd. Same opinion. July 18th, more cows reported sick. I telegraphed Prof. James Law, then in charge of *Pleuro-Pneumonia* at Chicago, for the Bureau of Animal Industry. He came and visited the herd with me, and declared the disease *Malignant Catarrh*. He attributed the disease to the same cause, and suggested the same management as has hitherto been done, naming it *Malignant Catarrh of Cattle* (See his report, page 34, Vol. III., "Public Health", in appendix to this report). Sept. 6th, more cattle in Steele Co. reported dying from the same disorder. Dr. Law made another visit and report (page 59, Vol. III., "Public Health"). Suspecting something in the feed as the possible cause, I at the suggestion of Dr. Law, had a botanical investigation made by Dr. Sandberg. He found a great variety of plants, but none to which the disease could be attributed. (See report Vol. III., p. 79, "Public Health").

One herd in Burnsville Tp., Dakota Co., probably *Malignant Catarrh*;

reported April 12, '88, as having symptoms simulating rabies. One animal dying, subsequently killed. The symptoms found were similar to those found by Prof. Law in Steele Co. Stock were in bad condition. No spread of the disease beyond this herd.

In Hector Tp., Renville Co., reported May 8, '88, by J. B. Tozer, of Hastings, personally describing peculiar disease in cattle belonging to himself and others. I sent Dr. Lambrechts to visit and report. He found five herds affected. Symptoms were those of Malignant Catarrh, due, he believed, to damp pastures, foul water, and insufficient and improper stabling. (See report, Vol. IV., p. 13 'Public Health.')

*Suspected Pleuro-Pneumonia*, reported April 12, '87, in the herd of Ames, French & Co., Carlisle Tp., Otter Tail Co. I visited the farm in company with Dr. Cole, Health Officer, James Cook, V. S., and Dr. Leonard, of Fergus Falls. Post mortem examination of lungs in two cases, revealed no disease. Cattle markedly out of condition; temperature ranged from 103° to 104°. At my request, M. R. Trumbower, V. S. in charge of Pleuro-Pneumonia, at Chicago, for the Bureau of Animal Industry, visited the herd with me. No specific disease discovered, but the sanitary conditions, insufficient food, crowded quarters, bad water, were sufficient to account for the mortality. (See Dr. Cook's Report, Vol. III., page 16, "Public Health.")

*Black Leg*, so called. In March, '87, I visited a herd near Red Wing, where young cattle were dying of supposed Black Leg. Samples of the blood were forwarded to Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, who inoculated several animals with it, of which one or two died of malignant oedema. In his report, (See page 9, Vol. IV., "Public Health") he suggests a treatment for this condition, and Dr. Lambrechts, of Willmar, contributes an article, (See page 10, Vol. III, "Public Health") to both of which the attention of all stock owners is called.

*Tuberculosis*. One case in Shell Rock Tp., Freeborn Co., reported as suspected Pleuro-Pneumonia. I replied that it was probably Tuberculosis, which, on examination of the lungs sent to me, I found to be so, they weighed 39 pounds, and were almost solid.

*Suspected poisoning*, in Indian Lake Tp., Nobles Co. July 6, Chas. Saxon reported lost 16 head in 24 hours. Examined by W. Standish, V. S. Mankato. July 19, owner reported no further sickness, and believed it a clear case of poisoning. Nineteen head died.

In Rock Creek Tp., Pine Co., reported as suspected foot and mouth disease, by the Town Clerk, Sept. 10, '88. Sore mouth, tongue and hoofs. Similar outbreak occurred at same time in adjacent towns in Wisconsin. Suspecting poisonous vegetation, Dr. Sandberg was requested to make a botanical inspection. He did so, and reported (See page 69, Vol. IV. "Public Health") giving details, and traces the disease to some irritating vegetables. Dr. Talbot, an inspector of the Bureau of Animal Industry, endorsed Dr. Sandberg's opinion. On removing cattle from suspected pasture disease disappeared.

**DISEASE OF SHEEP.** On May 1, '88, in Sioux Agency Tp., Yellow Medicine Co., a peculiar disease of sheep reported; "which droop around a few days; legs get weak, and they die in a day or two." Dr. Lambrechts, of Willmar, on inspection, reported the disease similar to Malignant Catarrh



of cattle; two cases in a herd of 300; cause crowded stables and poor ventilation.

DISEASE OF HOGS. July 14, '88, 100 hogs from St. Paul stock-yards reported dead from Hog Cholera, in Kenyon, Minn. The Health Officer of St. Paul reported no cases of Hog Cholera at the stock yards. Sept. 11, the Health Officer of Kenyon reported the disease disappeared, and believes it to have been a form of pneumonia.

### SPECIAL REPORT ON GLANDERS.

I refer to the attached tabular statements for details.

When the law putting the control of infectious diseases of animals into the hands of the Local and State Boards of Health was enacted, few had any idea of its wide diffusion throughout the state, of its infectiousness, or of its communication to man, and so it was a matter of a good deal of difficulty to arouse the local boards of health to their danger and duties in the matter. Three deaths of men from this cause attracted the attention of physicians, and the loss of working animals, affected by the disease, and the tedious delay in the isolation of suspected cases, have done more than anything else to interest owners and Local Boards of Health in control of the disease.

We speedily discovered that the state was overrun by horse-traders, who deliberately bought suspected, or infected, animals elsewhere for a song, "doctored" them into apparent health, and sold them to unsuspecting parties here. They made the trade appear so good a one to the buyer, that he rarely asked for a bill of sale, for a warranty, for the name and address of the salesman, or for the history of the animal. As a consequence, in the first year of our fight with glanders, there were plenty of such histories. An innocent purchaser of a cheap horse for cash or trade, finding himself sold, objected strenuously to the sacrifice of his purchase. In several cases such animals were retained until they had infected several other animals belonging to the owner or his neighbors, and it has frequently happened that the original case in a "nest of glanders" was the last to be killed.

Local Boards of Health hesitated at first to act promptly and thoroughly. They were repeatedly threatened with suits for damages, and in two or three cases such suits were brought and failed; so that, for the last year, threats and bluster have been less frequent, and the owner of suspected stock is the first to report the disease and to ask for measures for its control.

There is less disposition to "run off" horses than heretofore, some of the Local Boards of Health having followed up such

cases. As glanders have caused more loss and trouble than all other animal diseases together, I have endeavored to put the statistics and results of its distribution and management into several convenient forms for reference. See index of "Public Health in Minnesota," for further details.

*Studied by Years.*—The first year was devoted to the widest diffusion of the law and circular on glanders, and to correspondence with every Local Board of Health in whose district the disease was found to exist, the object being to awaken a widespread interest, and to show the necessity for a thorough co-operation between State and Local Boards of Health for reasonable success. The severest outbreaks were naturally the first to be dealt with, and the table following has been so arranged to show the failure or success of our methods. The second year the work began to tell more widely, and now the search for this disease, the isolation of all suspected animals, and the death of all infected, is as much the rule as the care of infectious diseases of men.

I wish to emphasize as strongly as possible the following quotation from my last report. "The greatest danger of glanders comes from the importation of infected and "doctored" horses and mules by unscrupulous dealers, and their purchase by buyers who know nothing of their history, and who do not demand, or receive, a reliable guarantee that they are sound and have not been exposed to infectious diseases. First-class dealers will offer a warranty and give it freely, if asked to do so, and there is nothing but justice and safety in the requirement."

The conclusions from the report are:

1. That glanders be included, by legislative enactment, in the class of infectious diseases of men, because communicable to man.

2. That the expense of dealing with infectious diseases of animals be provided for, as is now done for infectious disease of men, by legislative enactment.

3. That it be provided, also by legislative action, that attorneys of towns, villages and cities, or in case there are none, then the county attorney, be required to serve as legal adviser for Local Boards of Health, and as counsel when such boards have to go into courts to prosecute for violation of law, or to defend themselves in suit for damages for enforcing the law.

4. That Local Boards of Health enforce the penalties of the law whenever a clear violation of its provisions can be found.

## GLANDERS.

### GENERAL SUMMARY.

*November 1, 1886—October 1, 1888.*

Total number Counties in State .....	76
Total number Counties invaded.....	54
Total number localities invaded.....	147
Total number suspected cases.....	396
Total number of whom killed.....	294
Total number of whom released.....	93
Total number of whom remain unaccounted for.....	9

### SUMMARY FOR 1887.

*(January—December.)*

Total number of suspected cases, isolated.....	13
Total number of cases killed.....	129
Total number of animals released.....	79
Total number remaining unaccounted for.....	5

There were in the State in 1887:

Horses—1 year old.....	41,740
Horses—2 years old.....	42,158
Horses—3 years old and over.....	280,509
Total .....	364,407

213 animals isolated, or .058  $\frac{1}{2}$  cent. of total number in the State.

129 animals killed, or .035  $\frac{1}{2}$  cent. of total number of horses in the State.

## ABSTRACT OF STATISTICAL TABLE.

The law for the control of infectious diseases of animals, (Chap. 200 Laws of 1885,) went into effect March 7, 1885.

The following abstract is intended to show the distribution; number of outbreaks dealt with; and the proportion of recurrences of the disease in the same locality. With the detailed table which follows, all the statistical information in the office of the State Board of Health is condensed into a form available for reference. The correspondence upon which these tables are based is on file there also. Counties abstracted in order of date of reports.

KANDIYOHI Co. The first report came from this county.

In 1885, there were 4 original outbreaks; 30 cases, 5 killed, 25 released.

In 1886, 6 outbreaks; 2 in new and 2 in previously affected localities—11 cases, and all killed.

In 1887, 6 new cases in new localities; 5 killed and 1 released.

In 1888, 1 case in previously affected locality; killed.

No cases reported in this county since July, 1888.

OTTER TAIL Co. In 1885, 10 outbreaks in as many localities; 27 cases, 19 killed, 8 released.

In 1886, no outbreaks reported.

In 1887, 7 outbreaks and 1 suspected case; 4 localities previously affected and 2 in new localities—11 cases, 7 killed and 4 released.

In 1888, 6 outbreaks; 1 in old locality, 25 in new—13 cases, 9 killed, 4 released.

No cases reported in this county since May, 1888.

HENNEPIN Co. In 1885, disease in 3 localities; 20 cases, 8 killed and 12 discharged.

1886, 2 outbreaks in old locality; and 3 in one new; 6 killed, 1 released; 2 outbreaks in new localities—3 cases killed.

1887, 1 outbreak, new locality, and 1 in old—5 cases, 5 killed.

1887, 22 cases, one locality—17 killed, 5 released.

1887-88, same locality, 46 cases killed.

DAKOTA Co. In 1885-6, 4 localities, no recurrence; 6 cases, 5 killed, 1 released.

1887, 2 cases in locality previously affected; killed.

1888, 1 case in new locality; killed.

No cases in this county since September, 1888.

WASECA Co. 1885, 2 cases; 1 killed and 1 released.

1886, 6 cases in new locality, all killed.

1887, 1 suspected case in new locality.

No cases reported since October, 1886.

KITSON Co. 1885, a single case; killed.

1886, 1 case, in new locality; killed.

No cases reported in this county since February, 1886.

POLK Co. 1885, 11 outbreaks, 25 cases; 22 killed and 3 released.

1886, 12 cases, 6 localities; 8 killed, 4 discharged.

1887, 5 cases in old localities, 4 killed and 1 released; 4 cases, new localities; 1 killed, 4 released.

1888, 5 cases, 3 new localities; 4 killed and 1 record not complete.  
No cases reported in this county since June, 1888.

WRIGHT Co. 1885, 8 localities, 17 cases; 6 killed and 11 discharged.

1886, one case in new locality; killed.

1887, none reported.

1888, 2 cases in previously affected locality, of which record not complete.

None reported in this county since August, 1888.

MORRISON Co. 1885, 3 outbreaks, 2 localities; 4 cases killed.

1886, 2 suspected cases in 3 new localities.

None reported in this county since February, 1886.

BENTON Co. 1885, 1 outbreak, 3 cases; 2 killed and 1 released.

1886, 1 outbreak, 8 cases; 5 killed, 3 released.

1887, 2 new localities, 3 cases; killed.

None reported in this county since July, 1887.

POPE Co. 1885, 2 localities, 2 cases; 1 killed, 1 released.

1886, 1 new locality, 1 case; killed.

1887, 3 localities, 2 cases and 1 suspected; 2 killed and 1 released.

None reported in this county since December, 1887.

GOODHUE Co. 1885, 3 outbreaks, 12 cases: 11 killed, 1 released.

1886, 2 cases, two new localities; both killed.

1886, a suspected case; isolated and released.

1888, 3 localities, 1 old and 2 new—6 cases; 4 killed and 2 released.

None reported in this county since April, 1888.

DOUGLAS Co. 1885, 3 outbreaks, 5 cases; 3 killed and 2 discharged.

1886, none reported.

1887, 4 cases, in locality previously affected; 2 killed and 2 discharged.

None reported in this county since November, 1887.

FILLMORE Co. 1885, 1 outbreak, 4 cases; all killed.

1886, 1 case, new locality; killed.

1887, 1 case, new locality; killed; a suspected case isolated and discharged.

1888, 1 case, new locality; killed.

None reported in this county since June, 1888.

BECKER Co. 1885, 2 locations, 11 cases; 6 killed and 5 discharged.

1886, none reported.

1887, 2 cases, in locality previously affected; killed.

1888, 4 outbreaks, 13 cases; all killed.

None reported in this county since April, 1888.

NOBLES Co. 1885, 4 cases, 3 locations, suspected and isolated; 1 killed, 3 released.

1886, 3 localities, previously affected; 4 cases, 3 killed, 1 released.

1887, 4 cases, in 4 new localities, suspected and isolated; 1 killed, 3 released.

1888, 2 new localities, 3 cases; 2 killed, 1 released.

None reported in this county since June, 1888.



CROW WING Co. In 1885, 4 cases, 2 localities; 1 killed, 3 released.  
1886, none reported.

1887, 1 case, previously affected locality; killed.

None reported in this county since February, 1887.

CLAY Co. 1885, 1 case; killed.

1886, new locality, 2 cases; killed,

1887, 2 new localities, 3 cases; 2 killed and 1 released.

1888, 3 new localities, 10 cases; 5 killed, 5 released.

None reported in this county since July, 1888.

CHISAGO Co. 1885, 3 outbreaks, 9 cases; 7 killed, 2 released.

1886, none reported.

1887, 1 case in previously affected locality, killed; 1 case in new locality, killed.

None reported in this county since December, 1887.

BLUE EARTH Co. 1885, 2 cases, 1 locality; 1 killed, 1 released.

1886, 1 case, same locality; killed; 1 case, new locality, killed.

None reported in this county since September, 1886.

WILKIN Co. 1885, single outbreak, 1 case; killed.

1886, suspected case; record not complete.

1887, suspected case isolated and discharged.

1888, 2 new outbreaks, 3 cases. 3 killed.

None reported in this county since May, 1888.

MARTIN Co. 1885, 2 suspected cases discharged.

1886, 2 outbreaks, same locality, 3 cases; all killed; 3 outbreaks, 2 new localities, 8 cases; 5 killed, 3 released.

None reported in this county since October, 1886.

YELLOW MEDICINE Co. 1885, 1 outbreak, 4 cases; 1 killed, 3 discharged.

1886, 2 localities, 28 suspected; 5 killed, balance released.

1887, 1 new locality, 2 suspected cases; released.

1888, 1 case in previously affected locality, killed; 3 cases in 2 new localities, killed.

None reported in this county since June, 1888.

PIPESTONE Co. 1875, 3 cases; 3 killed.

1886, 1 case in new locality, killed.

1887, new locality, 1 case, killed.

1888, 2 localities, 4 cases; 3 killed and 1 not accounted for.

None reported in this county since June, 1888.

BIG STONE Co. 1885, 3 localities, 9 cases suspected; 1 killed, 8 discharged.  
1886, 2 cases in previously affected locality, killed; 2 cases, new locality, killed.

1887, 2 cases, 1 locality, killed.

None reported in this county since June, 1887.

HOUSTON Co. 1885, 1 outbreak, 4 cases; all killed.

1886, 2 cases, new locality, killed.

1887, none reported.

1888, 1 case, new locality; not accounted for.

None reported in this county since June, 1888.

SWIFT Co. 1885, 2 localities, 8 cases; 2 killed, 6 discharged.  
 1886, 1 case, new locality, killed.  
 1887, 6 cases in 4 new localities; all killed.  
 1888, 4 cases in 2 localities, previously affected; 2 killed and 2 discharged,  
 and 2 in new localities, killed.

None reported in this county since June, 1888.

ROCK Co. 1885, 3 outbreaks, 12 cases; 10 killed, 2 released.  
 None reported in this county since July, 1885.

WABASHA Co. 1885, 4 outbreaks, 12 cases; 7 killed, 4 released; 1 not  
 accounted for.

1886, 1 outbreak, new locality, killed.  
 None reported in this county since May, 1886.

RENVILLE Co. 1885. 1 outbreak, 3 cases; 2 killed, 1 released.  
 1886, none reported.  
 1887, 1 locality, 10 cases; 5 killed and 5 released.  
 1888, 3 new outbreaks, 18 cases; 16 killed, 2 released.  
 None reported in this county since May, 1888.

REDWOOD Co. 1885, 1 suspected case, isolated and released.  
 1886, new locality, 5 cases; 2 killed, 3 released.  
 1887, 1 outbreak, 3 cases; 2 killed, 1 not accounted for.  
 1888, 1 outbreak but no details.  
 None reported in this county since July, 1888.

SCOTT Co. 1885, 1 outbreak, 1 case; killed.  
 1886, new locality, 1 case; killed.  
 1887, 1 case, same locality, killed.  
 None reported in this county since November, 1887.

JACKSON Co. 1885, 2 outbreaks, 5 cases; 3 killed, 2 released.  
 1886, 4 suspected cases in previously affected locality; 1 killed, 3 released.  
 1887, 15 suspected cases in same locality; 4 killed and 11 released; 2 out-  
 breaks, new locality, 4 cases; 2 killed, 2 released.  
 1888, new locality, 2 cases; killed.  
 None in this county since June, 1888.

SHERBURNE Co. 1885, 2 localities, 3 cases; 2 killed, 1 released.  
 1886, none reported.  
 1887, none reported.  
 1888, 3 suspected cases, new locality, released.  
 No cases reported in this county since October, 1885.

STEARNS Co. 1885, 2 localities, 3 cases; 2 killed, 1 released.  
 1886, locality previously affected, 1 case; released.  
 1887, 1 case; 1 killed.  
 New locality, 5 cases; 4 killed, 1 record not complete.  
 1888, suspected cases reported.  
 None reported in this county since July, 1888.

AITKIN Co. 1886, 1 locality, 1 case; killed.  
 None in this county since July, 1886.

WASHINGTON Co. 1885, 2 cases, 1 locality; killed.

1886, new locality, 1 case; killed.

None reported in this county since January, 1886.

OLMSTED Co. 1886, none reported.

1886, 5 suspected cases, 1 locality; released.

1887, none reported.

1888, 3 outbreaks, 2 localities, 4 cases; 3 killed, 1 released.

None reported in this county since September, 1888.

GRANT Co. 1885, none reported.

1886, 6 cases; 4 killed, 2 released.

1887, new locality, 2 cases; killed.

None reported in this county since November, 1887.

CARVER Co. 1885, none reported.

1886, 1 case; killed.

1887, none reported.

1888, case in previously affected locality; killed.

None reported in county since February, 1888.

ST. LOUIS Co. 1885, none reported.

1886, 1 case; killed; new locality, 1 suspected case; isolated and released.

None reported in this county since March, 1886.

STEVENS Co. 1885, 2 outbreaks, 3 cases; killed.

1886, 1 suspected case, new locality; isolated and released.

None reported in this county since June, 1885.

FARIBAULT Co. 1885, 3 localities, 3 cases suspected and isolated; 1 killed;  
2 released.

None reported in this county since June, 1885.

NORMAN Co. 1885, none reported.

1886, 1 outbreak, 6 cases; 4 killed, 2 record not complete.

1887, none reported.

1888, 2 outbreaks, 8 cases; killed.

None reported in this county since September, 1888.

MEEKER Co. 1885, none reported.

1886, 2 localities, 2 suspected; 1 killed, 1 released.

1887, 4 outbreaks, 3 localities, 9 cases; killed.

None reported in this county since September, 1887.

BROWN Co. 1885, none reported.

1886, 1 case; killed.

None reported in this county since July, 1886.

LE SUEUR Co. 1885, none reported.

1886, 1 case; killed.

1887, none reported.

1888, same locality, 3 cases; 2 killed, 1 released.

None reported in this county since July, 1888.

CASS Co. 1885, none reported.

1886, none reported.

1887, 1 case; killed.

1888, 2 cases, same locality; 1 killed, 1 released.

None reported in this county since September, 1888.

MURRAY Co. 1885, none reported.

1886, none reported.

1887, 5 outbreaks, 4 localities, 8 cases; 5 killed, 3 released.

None reported in this county since December 1887.

DODGE Co. 1885, none reported.

1886, none reported.

1887, 1 suspected case; isolated and released.

No genuine cases reported in this county.

WATONWAN Co. 1885, none reported.

1886, none reported.

1887, 1 case; record not complete.

None reported in this county since June, 1887.

CHIPPEWA Co. 1885, none reported.

1886, none reported.

1887, 5 outbreaks, 5 localities, 8 killed, 3 released, 1 not accounted for.

None reported in this county since September, 1887.

TRAVERSE Co. 1885, none reported.

1886, none reported.

1887, 1 case; not accounted for.

None reported in this county since July, 1887.

NICOLLET Co. 1885, none reported.

1886, none reported.

1887, 3 outbreaks, 3 localities, 6 cases; 4 killed, 2 released.

WINONA Co. 1885, none reported.

1886, none reported.

1887, 2 outbreaks, 2 localities, 4 cases; 4 killed.

None reported in this county since October, 1887.

TODD Co. 1885, none reported.

1886, none reported.

1887, 2 suspected cases, 2 localities; 2 released.

None reported in this county since May, 1887.

RICE Co. 1885, none reported.

1886, none reported.

1887, 2 cases; 1 killed, 1 released.

None reported in this county since April, 1887.

FREEBORN Co. 1885, none reported.

1886, none reported.

1887, 1 case; killed.

None reported in this county since March, 1887.

ANOKA Co. 1885, none reported.

1886, none reported.

1887, 4 suspected cases, 2 localities; 2 killed, 2 released.

None reported in this county since March, 1887.

LAC QUI PARLE Co. 1885, none reported.

1886, none reported.

1887, 3 outbreaks, 2 localities, 5 cases; 3 killed, 2 released.

1888, 5 cases, 2 localities; 5 killed.

None reported in this county since August, 1888.

COTTONWOOD Co. 1885, none reported.

1886, none reported.

1887, one case; killed.

1888, 1 suspected case, new locality; released.

None reported in this county since December, 1887.

MARSHALL Co. 1885, none reported.

1886, none reported.

1887, none reported.

1888, 1 outbreak, 2 cases; killed.

None reported in this county since March, 1888.

SIBLEY Co. 1885, none reported.

1886, none reported.

1887, none reported.

1888, 1 suspected case; not accounted for.

None reported in this county since June, 1888.

WADENA Co. 1885, none reported.

1886, none reported.

1887, 1 case; killed.

1888, 1 suspected case, new locality; released.

None reported in this county since May, 1887.



	March 1, 1885, to October 1, 1885.				October 1, 1885, to Oct. 1, 1886.				October 1, 1886, to Oct. 1, 1887.				October 1, 1887, to Oct. 1, 1888.							
	Cases.	Killed.	Released.	Remaining.	Date of Report.	Cases.	Killed.	Released.	Remaining.	Date of Report.	Cases.	Killed.	Released.	Remaining.	Date of Report.	Cases.	Killed.	Released.	Remaining.	Date of Report.
KANDIYOH.																				
Whitefield Tp.....	15	3	12	..	3-19															
Willmar Tp.....	10	1	9	..	3-20															
Willmar Vil.....	2	1	1	..	4-18															
Green Lake Tp.....	3				6-17															
Harrison Tp.....																				
Dover Tp.....																				
Roseville Tp.....																				
OTTER TAIL.																				
Fergus Falls City...	2	2			3-23															
" ".....																				
Otto Tp.....	3	3			4-9															
E. Battle Creek Tp.	2	2			4-14															
Scambler Tp.....	9	6	3		4-27															
Pine Lake Tp.....	1	1	1	..	5-9															
Hobart Tp.....	2	2			6-5															
Pelican Tp.....	2	2			6-7															
Wo. side Tp.....						2	2			10-23-85										
Friberg Tp.....						3	3			11-7-86	4	1	3		5-7-87					
Lida Tp.....						1	1			12-6 "										
Compton Tp.....											1	1			7-12-87					
Pelican Rapids Tp.																1	1			10-7-87
Sverdrup Tp.....																6	4	2		1-21-88
Butler Tp.....																2	2			3-29 "
Everts Tp.....																2	2			4-24 "
Gerard Tp.....																2	2			5-15 "
HENNEPIN.																				
Corcoran Tp.....	1	1			3-28															
Maple Grove Tp.....	17	5	12		4-16	2	2			5-9-86	1	1			6-27-87					
Minnetonka Tp.....	2	2			7-27					8-10 "										
Excelsior Vil.....						1	1			2-27-86						4	4			11-9-87
" ".....						1	1			3-31 "						7	7			1-11-88
" ".....						1	1	1		9-24 "						3	3			1-30 "
Dayton Tp.....											2	2			10-14-86					
Brooklyn Tp.....											1	1			12-7 "					
Monticello Tp.....											1	1			7-7-87					
Minneapolis City...											22	17	5		5-14 "	46	46			10-13-87
DAKOTA.																				
Lakeville Vil.....	2	2			3-26										to 10-11					to 5-9-88
Douglas Tp.....						1	1			10-23-85						2	2			12-19-87
Hampton Tp.....										11-3 "										
Ha-tings City...						2	2			6-6-86										
Farmington Vil.....																1	1			9-13-88
WASECA.																				
Freedom Tp.....	2		2		4-1-85															
Isco Tp.....											1	1			5-2-87					
Otisco Tp.....						6	6			9-1-86										
KITTSON.																				
St. Vincent Tp.....	1	1			4-6															
Hallock Tp.....						1	1			2-20-86										
POLK.																				
Euclid Tp.....	7	7			4-6						17	3	14		2-17-87					
Lake Pleasant Tp..	6	3	3		6-8															
Roome Tp.....	1	1			6-12															
Crookston Tp.....	2	2			6-25															
" ".....	1	1			10-15															
Tilden Tp.....	2	2			6-24															
Poplar River Tp...	1	1			7-6															
Terrebonne Tp...	2	2			7-7						1	1			6-12-87					
Red Lake Falls Vi	1	1			7-23															
Gervias Tp.....	1	1			9-21															
Sullivan Tp.....	1	1			9-30															
Bygland Tp.....						2	2			1-1-86	3	2	1		6-7-87					
Gentilly Tp.....						1	1	1		1-16 "										
" ".....						1	1			5-9 "										

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POLK—Cont'd.																				
Lowell Tp.....						1	1			2-16 '86										
Fairfax Tp.....						2	2	1	1	4-13 "										
Crookston City.....						2	2			7-15 "	1	1			10-19-86					
Godfrey Tp.....						2	2			6-12 '86	2	2			7-5-87					
Grove Park Tp.....											1	1			4-4 '87					
Unorg. Tp.....												2			4-21 '87					
Queen Tp.....											1	1			5-13 "					
Liberty Tp.....																1	1			3-13-88
Andover Tp.....																2	2			3-28 "
Brandsvold Tp.....																2	1		1	6-25 "
WRIGHT.																				
Buffalo Tp.....	8	1	7		4-16 '85						2	2			11-0-86					
Alb on Tp.....	2	2			4-13 "															
Victor Tp.....	1	1			5-2 "															
Rockford Tp.....	1	1			5-17 "															
Monticello Tp.....	1	1			5-25 "															
Silver Creek Tp.....	3	2	1		6-22 "															
Cokato Vil.....	1	1			7-27 "															
Clearwater Tp.....						1	1			12-14-85										
Woodland Tp.....						1	1			3-17 '86										
Otsego Tp.....											1	1			11-0-86	2				2-8-18-88
MORRISON.																				
Little Falls.....	1	1			4-8 '85															
Motley Tp.....	1	1			7-26 "															
Swan River Tp.....						2	2			12-10-85										
Bellevue Tp.....						1	1			1-19 '86										
Elm Dale Tp.....						1	1			2-16 "										
BENTON.																				
Sauk Rapids.....	3	2	1		4-8															
Watab Tp.....											8	5	3		10-6-86					
Glendorado Tp.....											2	2			6-30-87					
Longola Tp.....											1	1			7-19					
POPE.																				
Walden Tp.....	1	1			4-12 '85															
Langhei.....						1	1			12-4 '85										
Lake Johanna Tp.....						1	1			6-2 '86										
Glenwood.....																1	1			10-13-87
Rolling Fork Tp.....																1	1			10-23
Grove Lake Tp.....																1	1			11-4
GOODHUE.																				
Belle Creek Tp.....	2	1	1		4- '85															
Florence Tp.....	2	2			9-23 "											1	1			11-24 '87
Belvidere Tp.....	1	1			9-20 "															
Cannon Falls Tp.....						4	4			10-30 '85										
Vasa Tp.....						2	2			11-13 "						1	1			3-10 '88
Redwing City.....						1	1			12-21 "						1	1			4-2 "
						2	2			7-2 '86										
Minneola Tp.....																4	2	2		1-6 '88
DOUGLAS.																				
Evansville Vil.....	1	1			4-27 '85											4	2	2		11-2 '87
Leaf Valley Tp.....	2	1	1		7-17 "						B'd changed; record not completed; animal released.									
Lake Mary Tp.....	2	2			7-27 "															
FILLMORE.																				
Norway Tp.....	4	4			5-1															
Bloomfield Tp.....						1	1			5-21 '86										
Carimona Tp.....											1	1			5-3 '87					
Chatfield.....																1	1			10-12 '87
Preston Vil.....																1	1			6-25 '88
BECKER.																				
Burlington Tp.....	2	1	1		5-11 '85															
Lake Park Tp.....	9	5	4		6-2 "											2	2			12-5 '87
Vil.																				
Detroit Vil.....																9	9			2-28 '88
Richwood Tp.....																1	1			4-20 "
Richwood.....																1	1			3-19 "
NOBLES.																				
Grand Prairie Tp.....	1	1			5-15 '85	1	1			5-31										

B'd changed; record not completed; animal released.

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NOBLES—Cont'd.																				
West Side Tp.....	2				6-15 '85															
Olney Tp.....	1	1			6-16 "															
Little Rock Tp.....						2	2			7-14 '86										
Worthington Vil.....						1	1			8-23 "										
Bloom Tp.....											4	1	3			3-25 '87				
Adrian Vil.....																2	1			4-20 '88
																2	2			6-30 "
CROW WING.																				
Brainerd City.....	3	1	2		5-20 '85						1	1				2-19 '87				
Mooreville Tp.....	1	1			7-7 "															
CLAY.																				
Glyndon Vil.....	1	1			5-28 '85															
Tp.....											2	2				12-0 '86				
Moland Tp.....											1	1				5-13 '87				
Highland Grove Tp.....											2	2				7-2 "				
Elkton Tp.....																2	1	1		3-24 '88
																2	2			4-2 "
Keene Tp.....																3	1			3-27 "
Goose Prairie Tp.....																3	3			7-10 "
CHISAGO.																				
Rush Seba Tp.....	2	2			5-30 '85															
Rush City.....	5	5			6-10 "											1	1			12-19 '87
Fish Lake Tp.....	2	2			6-20 "															
Nessell Tp.....																1	1			11-19 '87
BLUE EARTH.																				
Mankato Tp.....	2	1	1		6-2 "	1	1			5-17 '86										
Ceresco Tp.....						1	1			8-3 "										
WILKIN.																				
Campbell Tp.....	1	1			6-2 '85															
Breckenridge Tp.....						1				16-6 '86										
Deerhorn Tp.....											1	1				5-23 '87				
Brandrup Tp.....																2	2			3-29 '87
Bradford Tp.....																1	1			5-14 "
Breckenridge Vil.....						1				14-6 '86										
MARTIN.																				
Fairmount Vil.....	2	2			6-6 '85	2	2			6-10 '86	1	1				10-14 '86				
Silver Lake Tp.....						6	3	3		6-28 "										
						1	1			8-11 "						2	2			4-10 '88
						1	1			9-6 "						1	1			4-2 "
Nashville Tp.....																				
YELLOW MEDICINE.																				
Wergeland Tp.....	4	1	3		6-8 '85															
Oshkosh Tp.....						8	4	4		12-14 '85										
Canby Vil.....						20	1	19		7-10 "	1	1				5-23 '87	1	1		6-25 '88
Wood Lake Tp.....											1	1				4-28 "				
Florida Tp.....											1	1								
Minnesota Falls Tp.....											1	1								
Granite Falls Vil.....																2	2			4-10 '88
																1	1			4-2 "
PIPESTONE.																				
Osborne Tp.....	3	3			6-15 '85															
Eden Tp.....						2	2			6-1 '86										
Troy Tp.....																1	1			10-28 '87
Elmer Tp.....																1	1			4-24 '88
Burke Tp.....																3	2			16-25 "
BIGSTONE.																				
Brown's Valley Tp.....	2	2			6-23 '85															
Akron Tp.....	6	6			6-24 "	2	2			6-21 '86										
Artichoke Tp.....	1	1			8-3 "															
Almond Tp.....						2	2			9-3 '86										
Ortonville Vil.....											1	1				6-1 '87				
											1	1				6-18 "				
HOUSTON.																				
Spring Grove Tp.....	4	4			6-24 '85															
Hokah Vil.....											2	2				12-0 '86				
Houston Vil.....																1				16-22 '87
SWIFT.																				
Kirkhoven Tp.....	7	1			6-27 '85						1	1				5-27 '87				

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SWIFT—Cont'd.																				
Torning Tp.....	..	..	..	..	1 1	10-22 '85	..	..	..	..	1	1	10-2 '86	..	..	..	..	..	..	..
Kirkhoven Tp.....	..	..	..	..	..	..	..	..	..	..	1	1	5-20 '87	3	1	2	4-5 '88	..	..	..
Benson Vil.....	..	..	..	..	..	..	..	..	..	..	1	1	7-8 "	..	..	..	..	..	..	..
Benson Tp.....	..	..	..	..	..	..	..	..	..	..	1	1	7-27 "	..	..	..	..	..	..	..
Marysland Tp.....	..	..	..	..	..	..	..	..	..	..	2	2	7-27 "	1	1	6-5 '88	..	..	..	..
Six Mile Grove Tp.....	..	..	..	..	..	..	..	..	..	..	2	2	5-20 "	..	..	..	..	..	..	..
Swenoda Tp.....	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..
IROCK.																				
Magnolia Tp.....	5	5	..	..	8-27 '85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Beaver Creek Tp.....	3	1	2	..	7-8 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Martin Tp.....	4	4	..	..	7-9 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
WABASHA.																				
Gilford Tp.....	8	7	1	..	7-14 '85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Zambro Tp.....	1	..	1	..	8-18 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lake City.....	2	..	2	..	9-28 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lake Tp.....	..	..	..	..	1 1	10-7 '85	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Higland Tp.....	..	..	..	..	1 1	5-19 '86	..	..	..	..	..	..	..	..	..	..	..	..	..	..
RENVILLE.																				
Hector Vil.....	3	2	1	..	7-25 '85	..	..	..	..	..	..	..	..	..	..	6	3	3	11-9 '88	..
Martinsburg Tp.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	2	12-19 "	..
".....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..	3-21 '88	..
Hawk Creek Tp.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	9	2	5-17 "	..
Wangs Tp.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	3	..	5-19 "	..
REDWOOD.																				
New Avon Tp.....	1	..	1	..	8-10 '85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gales Tp.....	..	..	..	..	..	..	..	..	..	..	5	2	3	8-29 '87	..	..	..	..	..	..
Pesta Tp.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	11-22 '87	..
SCOTT.																				
Helena Tp.....	1	1	..	..	8-17 '86	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Shakopee City.....	..	..	..	..	..	..	..	..	..	..	1	1	10-27 '86	1	1	..	..	..	..	11-12
Petersburg Tp.....	2	..	2	..	9-21 '85	4	1	3	4-15 '86	..	..	..	..	..	..	8	2	6	12-24 '87	..
".....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	11-14 "	..
Midletown Tp.....	3	3	..	..	9-24 '85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Welmer Tp.....	..	..	..	..	..	..	..	..	..	..	2	..	2	2-18 '87	..	..	..	..	..	..
".....	..	..	..	..	..	..	..	..	..	..	2	2	5-18 "	..	..	2	2	..	6-29 '88	..
SHERBURNE.																				
Big Lake Tp.....	..	..	..	..	1 1	10-29 '85	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Becker Tp.....	..	..	..	..	2 2	9-27 '86	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Santiago Tp.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	3-7 '88	..
STEARNS.																				
Sauk Centre Vil.....	..	..	..	..	1 1	11-14 '85	1	1	..	9-4 '87	1	1	..	..	..	..	..	..	6-8 '88	..
Le Sauk Tp.....	..	..	..	..	2 2	12-3 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Springhill Tp.....	..	..	..	..	1 1	1-9 '86	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Eden Lake Tp.....	..	..	..	..	2 1	3-29 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Luxemburgh Tp.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	4	..	1 9-27 '88	..
AITKEN.																				
Aitkin Vil.....	..	..	..	..	1 1	11-20 '85	..	..	..	..	..	..	..	..	..	..	..	..	..	..
WASHINGTON.																				
Stillwater Tp.....	..	..	..	..	2 2	12-22 '85	..	..	..	..	..	..	..	..	..	..	..	..	..	..
"City.....	..	..	..	..	1 1	1-1 '86	..	..	..	..	..	..	..	..	..	..	..	..	..	..
OLMSTED.																				
Eyota Tp.....	..	..	..	..	5	5	1-12 '86	..	..	..	..	..	..	..	..	2	1	1	8 27 '88	..
Pleasant Grove Tp.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	9-18 "	..
".....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	8-18 "	..
ROCHESTER CITY.																				
GRANT.																				
Delaware Tp.....	..	..	..	..	1 1	2-58 '86	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Macsville Tp.....	..	..	..	..	4 4	2-28 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Herman Vil.....	..	..	..	..	1 1	2-28 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Erdahl Tp.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	11-22 '87	..
CARVER.																				
Chanhasen Tp.....	..	..	..	..	1 1	3-6 '86	..	..	..	..	..	..	..	..	..	1	1	..	2-8 '88	..
ST. LOUIS.																				
Fon du Lac Tp.....	..	..	..	..	1 1	3-9 '86	..	..	..	..	..	..	..	..	..	..	..	..	..	..



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St. Louis—Cont'd.																				
Herman Tp.....											1	1			9-10 '87					
STEVENS.																				
Morris Vil.....						1	1			3-15 '86										
Eldorado Tp.....						2	2			6-21 "										
Hancock Vil.....											1	1			11-13 '86					
FARIBAULT.																				
Joe Davis Tp.....						1	1			4-13 '86										
Blue Earth City.....						1		1		4-19 "										
Rome Tp.....						1		1		6-23 "										
NORMAN.																				
Lockhart Tp.....						4	4			6-28 '86	2				2-10-21 '86					
Shelly Tp.....											1		1		5-4 '87					
Flom Tp.....															6-6 "	6	6			7-17 '88
Fossum Tp.....															2-2 "	2	2			9-19 "
MEEKER.																				
Litchfield City.....						1		1		7-10 '86										
"						1	1			9-19 "										
Ellsworth Tp.....											1	1			5-2 '87					
"											4	4			6-3 "					
Darwin Tp.....											3	3			5-20 "					
Danielson Tp.....											1	1			9-7 "					
BROWN.																				
Sleepy Eye Tp.....						1	1			7-28 '86										
LE SUEUR.																				
Cordova Tp.....											1	1			12-0 '86	1	2	1		4-23 '88
"															2-2 "					7-10 "
CASS.																				
Gull River Tp.....											1	1			12-0 '86	2	1	1		9-0 '88
MURRAY.																				
Leeds Tp.....											3		3		2-7 '87					
Iona Tp.....											1	1			2-12 "					
Skandia Tp.....											2	2			4-23 "					
"											1	1			6-10 "					
Lowville Tp.....															1-1 "	1	1			12-2 '87
DODGE.																				
Hayfield Tp.....											1		1		6-13 '87					
WATONWAN.																				
Madelia Tp.....											1				16-16 '87					
CHIPPEWA.																				
Kragero Tp.....						4	4				2	2			7-4 '87					
Big Bend Tp.....						2	2				1	1			7-27 "					
Montevideo Vil.....						1	1				1	1			8-23 "					
Wandt Tp.....						2	1				2	1			10-2 "					
Rosewood Tp.....						3		3			3		3		9-24 "					
TRAVERSE.																				
Walls Tp.....											1			1	7-8 '87					
NICOLLET.																				
Traverse Tp.....											2		2		7-11 '87					
Lake Prairie Tp.....						2	2				2	2			3-26 "					
New Sweden.....						2	2				2	2			8-7 "					
WINONA.																				
Winona City.....																2	2			10-1 '87
Morton Tp.....																2	2			10-24 "
TODD.																				
Grey Eagle Tp.....											1		1		3-16 '87					
Burnhamville Tp.....											1		1		5-12 "					
RICE.																				
Northfield City.....											1	1			3-26 '87					
"											1		1		4-10 "					
FREEBORN.																				
Bancroft.....											1	1			4-5 '87					
ANOKA.																				
Anoka City.....											3	2	1		4-20 '87					
Linwood Tp.....																1		1		11-20 '87
LAC QUI PARLE.																				
Agassiz Tp.....											2	2			5-15 '87					
"											2		2		7-18 "					
Yellow Bank Tp.....											1	1			7-18 "					
Augusta Tp.....																3	3			5-30 '88





## SMALL POX IN MINNESOTA, FROM DECEMBER 1, 1886, TO OCTOBER 1, 1888.

No.	Locality.	County.	Date of Report	Name of Reporter.	Cases.	Deaths.	Origin.
1	St. Paul,	Ramsey.	Nov. 2, 1887.	Dr. Kilvington.	3	0	Unknown.
2	Minneapolis,	Hennepin.	Jan. 21, 1888.	Dr. Kilvington.	1	1	Supposed from second-hand pair of pants.
3	St. Paul,	Ramsey.	April 24, 1888.	Dr. Hoyt.	7	1	German emigrant.
4	Cambridge,	Isanti.	May 7, 1888.	Dr. Dartt.	3	Hem. of Bowels.	From Iowa.
5	Wangs Tp.,	Renville.	Sept. 9, 1888.	C. A. Evenson, C. B. S.	7	2	Norwegian emigrant just arrived.

Total Outbreaks.....	5
Total Counties.....	4
Total Cases.....	21
Total Deaths.....	4

NOTE.—This table was omitted from its proper place, page 32, hence it is printed here.

A PLAN FOR THE SANITARY DISPOSAL OF THE SEWAGE OF THE SECOND  
HOSPITAL FOR THE INSANE AT ROCHESTER.

In the matter of the complaint of the Local Board of Health, of the city of Rochester, against the Second Hospital for Insane, in that the sewage of said Hospital is permitted to enter Silver Creek, the following letter to the Board of Trustees states the ground of complaint and contains the opinion of the State Board of Health as to the complaint, and the best methods of dealing with the sewage.

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MINNESOTA STATE BOARD OF HEALTH, }  
OFFICE OF SECRETARY AND EXECUTIVE OFFICER, }  
RED WING, MINN., July 14th, 1888. }

*Dr. J. E. Bowers, Supt. Second Hospital for Insane, Rochester, Minn.*

DOCTOR:—In the matter of the complaint of the Local Board of Health, of the city of Rochester, against the Second Hospital for the Insane, that the sewage of said Hospital was being poured into Silver Creek, thereby making a nuisance, source of filth, and cause of sickness. I am instructed by this Board, to transmit through you, to the Trustees of said Hospital, the conclusions which this Board have reached in the matter.

By your courtesy, this Board visited the Hospital, examined the method of disposing of the sewage (about 75,000 gallons per diem) into Silver Creek, heard the statement of a committee of the Trustees and yourself, and learned something of the character, and lay of the farming lands of the Hospital. After due deliberation the following are the conclusions of this Board:

*1st.* The present method of disposing of the sewage of the Second Hospital for the Insane into Silver Creek, is a nuisance, source of filth and possible cause of sickness.

*2nd.* That if such disposal of sewage was ever justifiable, it is not so in this case, where there is not the quantity of water, rapidity of current, nor form of channel, necessary for the stream to clear itself of the filth so poured into it. The present nuisance is further increased by the fact that no attempt has been made to remove from said sewage the solids which it contains (cotton and woolen rags, scraps of food, and other putrescible animal and vegetable matters). An additional nuisance is the addition of the ammoniacal and other waste products of gas manufacture to the sewage and the stream.

*3rd.* That the nuisance must be stopped at once, by the removal of all refuse from said creek, deposited there in said sewage and that no more sewage be poured into said stream

*4th.* This Board advise that, till the permanent arrangements be made for disposal of the sewage under the soil, it may be readily disposed of by surface ditches, between growing crops. Run into shallow ditches it remains on the surface of the furrow, and if offensive may be covered with a cultivator, or other suitable plow. This method is inexpensive, very efficient, and if watched, inoffensive. It is in use on a large scale at Pullman, Ills. It may be used till cold weather or alternated with the permanent method adopted in time of draught or excessive heat. As it requires only temporary trenches it can be put in operation immediately. Any land under cultivation, or to be ploughed, can be used, the covering, if offensive, by shallow plowing being in such case, always available.

*5th.* This Board suggest that the farm land of the Hospital is admirably adapted to the method of disposing of the sewage by tile drains under growing crops. The Board is of the opinion that the temperature of the sewage is such that, even in winter, if such drains are of proper depth, and inclination, there would be no danger of freezing. As to location of such drains the Board prefers the slope towards the ice pond, and believes that there would, then, be no danger to the present water supply as that seems to have a source far away from this danger, even if the pipes were laid in any other available arable land. The engineering problems involved in the above propositions are neither difficult nor expensive, and two or three acres of land are enough for the present. This Board therefore hope that there will be no delay in the abatement of the nuisance complained of.

By order of the State Board of Health.

CHARLES N. HEWITT,

*Secretary and Executive Officer.*

**"STATE BOARD OF HEALTH" FUND—FINANCIAL STATEMENT.**

*December 1st, 1886 to October 1st, 1888.*

Balance December 1st, 1886.....		\$3,520.39
Secretary's salary, 8 months.....	\$1,666.64	
Account January 4, 1887—December, 1886.....	435.33	
February 21, "—January, 1887.....	114.33	
March 1, "—February ".....	109.85	
April 12, "—March ".....	81.19	
May 2, "—April ".....	93.12	
May 31, "—May ".....	186.90	
July 1, "—June ".....	104.78	
August 2, "—July ".....	118.49	
	<hr/>	
Balance August 1, 1887.....	\$2,910.63	\$3,520.39
	609.76	
	<hr/>	
	\$3,520.39	3,520.39
	<hr/>	
Appropriation August 1, 1887 to August 1, 1888.....		\$5,000.00
Account August 31, "—August 1887.....	207.63	
September 30, "—September ".....	143.86	
November 1, "—October ".....	92.08	
December 1, "—November ".....	243.86	
January 4, 1888—December.....	167.96	
February 4, "—January 1888.....	71.12	
March 6, "—February ".....	150.39	
April 5, "—March ".....	146.88	
May 1, "—April ".....	142.81	
June 4, "—May ".....	603.64	
July 3, "—June ".....	125.92	
August 2, "—July ".....	146.85	
Secretary's salary.....	2,499.96	
	<hr/>	
Supp. to account August 2, 1888.....	\$4,742.99	\$5,000.00
	36.25	
	<hr/>	
	\$4,779.24	5,000.00
Balance August 1, 1888.....	220.76	
	<hr/>	
	\$5,000.00	\$5,000.00
	<hr/>	
Appropriation August 1, 1888 to August 1, 1889.....		\$5,000.00
Secretary's salary two months.....	416.66	
September 8, 1888—August, 1888.....	67.92	
October 3, "—September.....	129.82	
	<hr/>	
	\$ 614.40	
Balance October 1, 1888.....	4,385.60	
	<hr/>	
	\$5,000.00	\$5,000.00

**ITEMIZED STATEMENT OF EXPENDITURES—"STATE BOARD OF HEALTH" FUND.**

	Dec. 1, 1886 to Aug. 1, 1887.	Aug. 1, 1887 to Aug. 1, 1888.	Aug. 1, 1888 to Oct. 1, 1888.
For Clerks.....	\$ 306.45	\$ 406.83	\$ 71.98
Telegraph and Telephone Service.....	15.02	55.87	11.12
Books and Binding for Library.....	45.53	145.21	6.43
Paper for Circulars and Blanks.....	12.89	4.65	.....
Laboratory Supplies, Apparatus and Expenses.....	84.66	598.25	2.05
Stationery and Supplies for Office.....	81.60	78.85	2.43
Express and Freight Charges.....	25.33	17.66	7.53
Traveling Expenses—Members of Board.....	183.75	251.72	10.14
Fuel.....	17.25	54.32	3.50
Postage and Box Rent.....	76.32	82.96	7.44
Printing Circulars, Special Reports and Blanks.....	246.39	371.44	24.52
Expenses in Control of Infectious Diseases.....	.....	80.30	50.60
Expenses Sanitary Conference at Rochester.....	.....	71.27	.....
Four Stereopticon Slides, Illustrating Variola.....	.....	6.40	.....
Investigation of Offensive Trades.....	.....	53.55	.....
Surgeon Chas. Smart, U. S. A., Analyses and Report on Mississippi River as a Source of Public Water Supply	150.00	.....	.....
Secretary's Salary.....	1,666.64	2,499.99	416.66
Total.....	\$2,910.63	\$4,779.24	\$ 614.40

# "INFECTIOUS DISEASES OF ANIMALS" FUND—FINANCIAL STATEMENT.

*December 1st, 1886 to October 1st, 1888.*

Appropriation August 1, 1886 to August 1, 1887.....	\$	333.30	3,000.00
Expenses to December 1, 1886, from August 1, 1886.....			
		333.30	3,000.00
Balance December 1, 1886.....		2,666.70	
		<u>\$3,000.00</u>	<u>3,000.00</u>
Balance December 1, 1886.....			2,666.70
Account January 4, 1887—December, 1886.....		67.80	
February 21, "—January, 1887.....		139.86	
March 1, "—February.....		108.24	
April 12, "—March.....		148.79	
May 2, "—April.....		235.73	
May 31, "—May.....		85.01	
July 1, "—June.....		128.70	
August 2, "—July.....		105.38	
		<u>1,019.51</u>	<u>2,666.70</u>
Balance, August 1, 1887.....		1,647.19	
		<u>\$2,666.70</u>	<u>2,666.70</u>
Appropriation August 1, 1888 to August 1, 1889.....			\$3,000.00
Account August 31, 1887—August 1887.....		40.60	
September 30, "—September.....		36.74	
November 1, "—October.....		52.01	
December 1, "—November.....		57.07	
January 4, "—December.....		137.57	
February 3, "—January, 1888.....		65.03	
March 6, "—February.....		50.14	
April 5, "—March.....		105.87	
May 1, "—April.....		133.54	
June 4, "—May.....		261.20	
July "—June.....		51.88	
August 2, "—July.....		80.06	
		<u>\$1,077.71</u>	<u>\$3,000.00</u>
Supp. account, August 2, 1888.....		2.25	
		<u>1,079.96</u>	<u>\$3,000.00</u>
Balance, August 1, 1888.....		1,920.04	
		<u>\$3,000.00</u>	<u>\$3,000.00</u>
Appropriation August 1, 1888 to August 1, 1889.....			\$3,000.00
Account September 8, 1888—August, 1888.....		49.17	
October 3, "—September.....		205.79	
		<u>254.96</u>	<u>3,000.00</u>
Balance, October 1, 1888.....		2,745.04	
		<u>\$3,000.00</u>	

## ITEMIZED STATEMENT OF EXPENDITURES—"INFECTIOUS DISEASES OF ANIMALS" FUND.

	Dec. 1, 1886 to Aug. 1, 1887.	Aug. 1, 1887 to Aug. 1, 1888.	Aug. 1, 1888 to Oct. 1, 1888.
For Clerks.....	\$ 226.40	\$ 354.07	\$ 69.81
Telegraph and Telephone Service.....	29.66	23.91	12.63
Books and Binding for Library.....	14.00	7.47	2.50
Printing and Paper for Circulars and Blanks.....	180.10	131.08	5.15
Laboratory Supplies, and Expenses.....	1.05		
Stationery and Supplies for Office.....	34.15	11.52	
Express and Freight Charges.....	3.70	3.65	
Traveling Expenses, Members of the Board.....	74.14	59.53	
Fuel.....	8.75	18.83	
Postage.....	66.94	80.53	7.38
Expenses in Control of Infectious Diseases of Animals.....	380.62	352.97	157.49
Expenses Conference at Rochester.....		36.40	
Total.....	<u>\$1,019.51</u>	<u>\$1,079.96</u>	<u>\$ 254.96</u>



**"VITAL STATISTICS" FUND.—FINANCIAL STATEMENT.**

*March 7, 1885 to October 1, 1888.*

Appropriation March 7, 1887 to August 1, 1887.....		\$397.20
Account May 2, 1887—April, 1887.....	\$ 301.49	
May 31, "—May.....	35.35	
July 1, "—June.....	28.43	
	\$ 360.27	397.20
Balance, August 1, 1887. ....	36.93	
	\$ 397.20	\$ 397.50
Balance, August 1, 1887.....		\$ 36.93
Appropriation August 1, 1887 to August 1, 1888.....		1,000.00
Account August 31, 1887—July and August, 1887.....	226.82	
September 30, "—September.....	77.24	
November 1, "—October.....	100.00	
December 1, "—November.....	59.97	
January 4, 1888—December.....	78.81	
February 4, "—January, 1888.....	79.91	
March 6, "—February.....	125.25	
April 4, "—March.....	71.28	
May 1, "—April.....	67.75	
June 4, "—May.....	61.00	
July 3, "—June.....	65.00	
August 2, "—July.....	54.25	
	\$1,065.28	\$1,036.93
Balance August 1, 1888.....		28.35
	\$1,065.28	\$1,065.28
Balance August 1, 1888.....	28.35	
Appropriation August 1, 1888 to August 1, 1889.....		1,000.00
Account September 8, 1888—August 1888.....	65.65	
October 3, "—September.....	57.08	
	151.08	1,000.00
Balance, October 1, 1888.....	848.92	
	\$1,000.00	\$1,000.00

**ITEMIZED STATEMENT OF EXPENDITURES.—"VITAL STATISTICS" FUND.**

	Mar. 7, 1877 to Aug. 1, 1887.	Aug. 1, 1887 to Aug. 1, 1888.	Aug. 1, 1888 to Oct. 1, 1888.
For Clerks.....	\$ 33.00	\$ 635.88	\$ 82.12
Printing and Paper for Circulars, Blanks, Forms, &c..	165.53	84.74	15.11
Registers, Stationery and Supplies for Office.....	5.15	99.41	2.00
Express and Freight Charges.....	15.61	31.42	
Postage.....	140.98	196.33	23.50
Fuel.....		17.50	
Total.....	\$ 360.27	\$1,065.28	\$ 122.73

THE  
VITAL STATISTICS  
OF THE  
STATE OF MINNESOTA,  
FOR THE  
YEARS 1886, 1887 AND 1888.

*Arranged and Edited by the Secretary of the State Board of Health and Vital Statistics.*

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WITH AN APPENDIX SHOWING THE CHARACTER, LOCATION,  
AMOUNT AND MORTALITY OF DISEASE DURING THE  
HALF YEAR JANUARY-JUNE, 1888, AND FOR  
EACH MONTH THEREAFTER.

MINNEAPOLIS:  
HARRISON & SMITH, PRINTERS.  
1888.

STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, Red Wing, Minn., Sept. 1st, 1888.

HON. A. R. MCGILL, Governor of Minnesota,

Sir:—I beg leave to submit the Report on Vital Statistics for the years 1886, 1887, and a portion of 1888, with copies of the provisional Monthly Statements of Births and Deaths for 1888.

Very respectfully,

Your obedient servant,

CHARLES N. HEWITT, M. D.,

Secretary.

## An Act to Provide for the Collection of Vital Statistics.

*Be it enacted by the Legislature of the State of Minnesota :*

SECTION 1.—The Clerk of each town, and the Health Officer of each village, borough or city in this State, shall obtain and register the following facts concerning the births and deaths occurring therein, separately numbering and recording the same in the order in which he obtains them, designated in separate columns, viz: In the registry of births, the date of birth, the name of the child (if it have any), the sex and color of the child, the names and places of birth of the parents, and the date of the record; in the registry of deaths, the date of death [the name of the deceased], the sex and color, the condition, whether single, widowed or married [the age, place of birth], the names and places of birth of the parents, the disease or cause of death, and the date of the record. The County Auditor of each County shall furnish each Clerk or Health Officer within his County, at the expense of the County, a book in which to register the facts concerning the births and deaths as above provided. Provided, however, that in cities of over 100,000 inhabitants, where the duties hereby imposed upon the Health Officer, have heretofore been imposed upon the City Clerk, the latter shall continue to perform the same and receive the compensation therefor.

SEC. 2.—Parents shall give notice to such Clerk or Health Officer of the births and deaths of their children; every householder shall give like notice of every birth and death happening in his house; the oldest person, next of kin, shall give such notice of the death of his kindred; the keeper, or other proper officer, of every workhouse, poorhouse, reform-school, jail, prison, hospital, asylum, or other public or charitable institution, shall give like notice of any birth or death happening among the persons under his charge. Whoever neglects or refuses to give such notice for the period of ten (10) days after the occurrence of a birth or death, shall forfeit a sum not exceeding twenty (20) dollars, to be collected as other fines are collected by law.

SEC. 3.—Any physician having attended a person during his last illness, shall, within ten (10) days after the decease of such person, furnish for registration to such Clerk or Health Officer a certificate of the duration of the last illness, the name of the deceased, his age, the disease of which the person died, and the date of his decease. And any physician or midwife having attended a case of confinement, shall, within ten (10) days thereafter, furnish for registration to said Clerk or Health Officer a certificate of the date of birth, sex and color of the child, with the names, dates and places of birth of the parents. If any physician or midwife neglects to make such certificate, he shall forfeit the sum of twenty-five (25) dollars, to be collected as other fines are collected by law.

SEC. 4.—Such Clerk, or Health Officer, shall, on or before the fifth (5) day of each month, transmit to the Secretary of the State Board of Health and Vital Statistics, upon blanks to be furnished by said Board, a certified

copy of the registry of births and deaths which have occurred within such town, village, borough or city, during the calendar month immediately preceeding. For obtaining, registering and returning the facts herein required, such Clerk or Health Officer shall be entitled to receive from the County Treasury of his County, twenty-five (25) cents for each birth or death so obtained, registered and reported. And for neglect to perform such duties as herein required, he shall forfeit a sum not exceeding fifty dollars for each offense, to be collected as other fines are collected.

SEC. 5.—It shall be the duty of the State Board of Health and Vital Statistics, to prepare and furnish to such Clerks and Health Officers, suitable blanks and instructions for the making of the returns herein provided for. And the Secretary of said State Board of Health and Vital Statistics, shall, annually, on or before the fifteenth (15) day of January of each year, transmit to the Clerk of the District Court of each County, all of the said returns received by said Secretary from such Clerks or Health Officers, in such County during the year ending on the last day of the preceeding December, together with his certificate showing the aggregate number of births and deaths so reported in such year by each such Clerk and Health Officer.

SEC. 6.—The said Clerk of the District Court shall thereupon file the said returns so to him transmitted, in his office, and shall also issue to each such Town Clerk and Health Officer a certificate showing the amount due to them respectively, for the obtaining, registering and reporting the births and deaths aforesaid, as the same may appear from the said certificate of said Secretary of the State Board of Health and Vital Statistics. For all his said services, such Clerk of the District Court shall be entitled to receive from the County Treasurer of his respective county for recording such births and deaths, and making such abstract thereof as he may by law be required to make, the sum of ten (10) cents for each such birth or death. And for his failure to perform any of the duties herein provided, for such Clerk of the District Court, shall forfeit the sum of fifty (50) dollars, to be collected as other fines are collected.

SEC. 7.—The County Auditor of each County, upon the presentation to him of the aforesaid certificate of the Clerk of the District Court of his County, shall issue and deliver to each Clerk and Health Officer, respectively, his warrant upon the County Treasurer for the amount in said certificate stated to be due to such Clerk or Health Officer, and the County Treasurer, upon the presentation of such warrant, shall pay the same to the person entitled thereto out of the general funds of the County Treasury.

SEC. 8.—To cover all Clerk hire, stationery and incidental expenses of the State Board of Health and Vital Statistics under this act, the sum of one thousand (1,000) dollars shall be and hereby is annually appropriated.

SEC. 9.—Sections 81, 82, 83, 84 and 85 of Chapter six (6) of General Statutes of 1878, and all other acts and parts of acts inconsistent with this act, are hereby repealed.

SEC. 10.—This act shall take effect and be in force from and after its passage.

Approved March 8th, 1887.



## PREFACE.

The following report is the first under the law transferring the duty of collecting, collating, editing and publishing the returns of births and deaths from the Commissioner of Statistics to the Secretary of the State Board of Health and Vital Statistics.

As was to be expected, the change from the leisurely methods which had become customary under the old law of *annual* returns, to the prompt, and more accurate, *monthly* returns required by the new, was not possible without some difficulty and protest. It is a fact, however, that objection has been confined to less than half a dozen Township clerks out of nearly 1,250 reporting. On the contrary the larger proportion, with most of more than 200 Health Officers, have given the new method a hearty and intelligent support. We have all learned in the course of the last eighteen months, that success in so great an undertaking as this can come only from patient and united effort. There is no dodging hard work if constant and consecutive improvement is to be secured.

At this date (August 5th, 1888) so large a proportion of the monthly returns are on time, and are rapidly increasing, month by month, in fullness and accuracy, that we are confident of better results than we had dared hope for.

Just in proportion as the advantage, and necessity of accurate monthly returns are recognized by local Boards of Health and Health Officers, is there complaint, by them, of popular indifference and lack of cooperation, and even of neglect, or refusal, of medical men to make the returns required by the law. As time has gone on people and physicians have become aware of the real purpose of the returns, and complaints are less frequent.

The clergy, of all creeds, are not helping as they ought to do. Nearly all births and deaths are matters of ecclesiastical record, and very soon after their occurrence, so that great assistance would be afforded if the clergy would permit the Health Officer, or Clerk, to compare records monthly. The benefit will be mutual, as these officers are best able to report the presence, or danger of infectious diseases, and so further the work of the clergy-

man, and, besides, open the way for him to assist efficiently in warding off such diseases, or limiting the field of their operation, and reducing the number of their victims.

*The intention of the present law is to make the vital statistics of the population contribute directly to a knowledge of the character, location, extent, and fatality, of the diseases causing sickness and premature death among them.* The only change made in the original bill by the Legislature, was the addition of the last paragraph to section one, beginning "Provided, however, that in cities of more than 100,000 inhabitants, etc.," the effect of which was to leave the reporting of vital statistics, and the pay therefor, with the city clerks, while the work of collecting them, (the death returns at least,) is really done by the Health Officers of St. Paul and Minneapolis, the only cities affected by the amendment.

By the terms of the new law the monthly collection of the statistics began March 7th, 1887. No provision was made for the publication of the returns of 1886, already in the hands of the Commissioner of Statistics. The appropriation for the work in the office of the Secretary of the State Board of Health, (\$1,000) began in March, 1887, and has barely sufficed for necessary clerk hire, postage and printing from that date on. But to prevent any break in the succession of reports from the old to the new, I received the original returns for 1886 from the Commissioner of Statistics and by using spare time, as available, have been able to compile them to some extent, as will be seen in the report.

For the first three months of 1887, not provided for in the law, I asked for the returns, and many Health Officers and Clerks supplied them but not all. (Minneapolis is missing to April 1st, and of the smaller cities, Moorhead for example, has made no returns at all.) These and some others are the exceptions, but they compel the substitution of an average of similar returns from those places in previous years, for the missing ones of 1887, in the estimates of grand totals.

This report, therefore, represents the vital statistics of Minnesota for the years 1886, 1887, and a portion of 1888.

*The monthly collection, compilation, and publication of these statistics* is a great advance in the work of making them of some immediate practical use, and merits a moments explanation.

What we are aiming at, in accurate monthly returns, is their use for the study, and prompt publication, of the facts of disease and mortality as will be most useful for Health Officers and Local Boards of Health, in two ways: 1st. In the every day work of preventing or controlling disease and disease cause: 2nd. In the more careful and deliberate study of causes, and means of prevention and control, which lies at the foundation of scientific sanitary work.

It will be readily understood, for example, that the greatest immediate value of a carefully arranged return of deaths, to such men, would be that it gave the most recent and accurate information of the distribution, character, season, amount and mortality of individual diseases. If, in addition such a report could include the relations of each of these diseases to each other, or of one class to another, the nativity, parent-nativity, sex and other like facts, its value would be further increased. It is expected in addition to make such an arrangement with the State Weather Service through Prof. Payne the director, as to publish with the mortality record of each month, the weather record as well, and with direct reference to its general bearing on disease prevalence. It is hoped also, to be able to study epidemic, and marked endemic, outbreaks of disease in their meteorological relations, with the aid of Prof. Payne's observers, in localities where they occur. There will be little direct advantage in such work, from the sanitary standpoint, if it cannot be brought into close and living relation with the causation and prevention of disease, and to that end something different than a bare record of meteorological observations is needed, as very few Health Officers, or Clerks, have the necessary knowledge of the subject, or time if they did, to work out the relation of the one set of facts to the other. With Professor Payne's aid I hope to get the mortality data, and the meteorological records for corresponding periods, into such form as to be comparable graphically, a method which has many advantages for such work as ours.

If all that is proposed above can be done, there yet remains an essential not provided for; prompt publication and wide distribution. In March, 1885, the State Board of Health permitted me to begin the publication of a monthly, which should serve, among other purposes, as a ready means of communication be-

tween that Board and the great number of Local Boards of Health and Health Officers, who were then brought, by law, into so intimate relations. The monthly PUBLIC HEALTH IN MINNESOTA then begun, was the pioneer of its class, and has become a very important helper in our work. Showing the Secretary of State and State Auditor its economy and wide distribution, I asked permission to publish this report of vital statistics in monthly instalments, and, (having reserved enough copies for the use of the Legislature) to distribute the remainder in PUBLIC HEALTH to every local Board of Health and Health Officer and to the newspapers of the State. In this way we can secure, in the quickest time, with the least expense, and in available shape, the distribution of the facts of current diseases, their character, location, etc., to all directly interested. The plan was after due consideration, approved and with the August (1888) issue of PUBLIC HEALTH the publication begins.

All who are familiar with the manifold difficulties which must accompany an attempt to make Vital Statistics help to the recognition of the existence, locality, character, prevention and control of disease will be interested in this attempt to begin to do it. Comparison with similar work in other states will help to judge its success. It must be remembered that the necessity for this effort was recognized by the governor in his message, as by his predecessor, in the same way. It was recognized by the Legislature in the almost unanimity of its endorsement of the plan, which is now winning its way to the support of those most interested, the working Health Officers, medical and lay, as an efficient help to a more intelligent knowledge of when, where, and what to do, for the prevention or control of disease, and the health, longevity and prosperity, of all the population of the commonwealth.

CHARLES N. HEWITT, M. D.

*Secretary State Board of Health and Vital Statistics.*

# MINNESOTA.

STATE BOARD OF HEALTH AND VITAL STATISTICS. }  
OFFICE OF THE SECRETARY AND EXECUTIVE OFFICER. }  
RED WING, Aug. 9th, 1888.

This report is upon the births and deaths which have been registered in this office for the years 1886, 1887 and 1888.

The returns for 1886 were delivered to me by the Commissioner of Statistics, as received by him from the clerks of District Courts; and so far as possible they have been incorporated in this report.

The statistics for 1888 will be brought up as near to the close of the year as the returns in my hands will permit.

## POPULATION.

The following are the census returns for 1860-'85, with actual increase for each five years, and the rate per cent. of that increase:

YEAR.	POPULATION.	YEAR.	POPULATION.	INCREASE.	PER CENT. OF INCREASE.
1860	172,023	1865	250,099	78,076	45
1865	250,099	1870	430,706	189,607	75
1870	430,706	1875	597,407	157,701	36
1875	597,407	1880	780,773	183,366	30
1880	780,773	1885	1,117,798	337,025	43

Taking an average of these per cents of increase of population for the years 1860-'85, by periods of five years, the total increase of population is 45 per cent., or an average of 9 per cent. per annum. This is also the average of the ten years 1875-'85. For the years 1880-'85 it was an average but little over 8 per cent. per annum. The difference in rate of increase from one census year to another is considerable, due, chiefly, to the varying amount of immigration. Emigration has not, hitherto, to an appreciable extent, affected our population, but will have to be taken into account hereafter.

Assuming, then, as is usual, that the average increase of census years was continued in the years following, we get the following tables:

YEAR.	POPULATION.	MALES.	FEMALES.	NOTE.—In the census years 1880-85; 56.31 per cent. of the population were males in 1880, and 54.15 per cent. in 1885; the average is 55.23 per cent.
1886	1,218,399	672,920	545,479	
1887	1,328,054	738,484	594,570	
1888	1,447,578	779,497	668,081	

It is upon the population, as above estimated, that the rates, worked out in this report, will be calculated.



## BIRTHS AND DEATHS.

For reasons stated in the preface, and hereinafter, it is a very difficult task, under the most favorable conditions, to obtain full and accurate returns of births, so large a proportion occurring without the attendance of a physician or midwife, from whom alone accurate and regular reports can be obtained. As collected heretofore, by a house to house visit, rarely by a physician, but usually by one not fitted for the work, there was great liability to error in details, which seriously affects the value of the returns, and the deductions drawn from them. Our rule is to admit no record to these tables that has not been submitted to every practicable test of accuracy, which, (being in direct correspondence with every Health Officer or Clerk,) we are able to apply.

There is nothing like the difficulty in getting the returns of deaths, as will appear when the consolidated returns are studied. Those for 1887 are believed to be as nearly accurate as any heretofore published in the United States, and represent the actual number of deaths with the causes of death, and other facts deducible from the returns.

*Marriages* are not reported to me and therefore not included in this report.

## BIRTHS.

Births registered in 1886 was 38,149, in the proportion of 31.0 to 1,000 of population (including still-births).

Births registered in 1887 were 29,211, in the proportion of 22.0 to 1,000 of population (still-births included).

The births for the first six months of 1888 will be found accounted for, to date, in the Appendix, as will those of each subsequent month. The complete return for the year 1888 cannot be compiled till February, 1889, when nearly the last of delayed returns will have been received, and the necessary corrections made; but the provisional summaries published monthly, during the year are sufficient for sanitary purposes and other immediate use.

The falling off in the birth returns of 1887 is due to the change from the old to the new mode of registration that year. The returns for the first quarter were very incomplete (the new law went into operation March 7, 1887) and the improvement was of necessity gradual. It was the custom (as already stated)

under the old law, to collect the data by a house to house visit, in December for the whole year; but when December of that year came around, so large a proportion of the returns were in, by the *monthly* reports, that few clerks thought they could afford to make a visit to complete them, and so, from this cause, also, a large number of births failed of registration. The births for 1887 which were reported, have been carefully corrected (chiefly by correspondence) and will be found to be arranged for easy reference and study, but cannot be used for comparison with same statistics for other years, for the reasons given above.

STILL-BIRTHS have heretofore been returned both as births and deaths, but when the work came into my hands the rule was changed and still-births accounted for as deaths only. They are included in the above total for 1887, but are excluded from the total of the following tables.

Table No. 1 is so arranged as to show, for each sex, the facts of Color, Condition, Number at birth, Nativity and Parent Nativity, for each month of the year 1887. It is a carefully corrected statement of the above facts respecting nearly 29,000 children born in Minnesota in that year, whose statistics are on file in this office. Each individual record has been carefully copied, compared and corrected by correspondence when incomplete.

Table No. 2 presents the same facts by quarterly statements.

Table No. 1.—BIRTHS IN 1887 BY MONTHS.

Sex.	Color.		Condi- tion.		No. at Birth.		PARENT NADIVITY.																
	White.	Colored.	Unknown.	Legitimate.	Illegitimate.	Single.	Twins.	Triples.	Both Amer.	Both For.	Amer. F. For M.	Unknown.	Min.	N. E. States.	Other U. S.	British America.	Great Brit'n	Nor- way.	Swe- den.	Ire- land.	Other ("n'ts).	Unkn.	
1840 Male	1068	2	1046	6	962	17	2	217	533	30	67	33	65	125	16	183	211	160	133	131	78	72	31
	877	877	872	5	862	13	1	200	510	41	92	34	71	125	15	164	171	144	94	96	17	87	
	Female	3	3	872	3	962	30	3	240	533	35	38	37	54	107	17	206	211	133	130	128	98	82
1842 Male	967	967	961	6	937	30	3	229	538	35	38	37	54	107	17	206	211	133	130	128	98	82	31
	859	859	851	8	833	26	1	219	180	52	76	32	69	98	20	182	187	35	133	111	73	76	
	Female	3	3	833	26	937	30	3	240	533	35	38	37	54	107	17	206	211	133	130	128	98	82
2318 Male	172	1169	3	1172	1169	9	1	262	674	62	124	33	57	433	21	254	267	68	162	173	98	78	
	138	1337	1	1137	1169	9	1	262	674	62	124	33	57	433	21	254	267	68	162	173	98	78	
	Female	8	8	1169	9	1169	9	1	262	674	62	124	33	57	433	21	254	267	68	162	173	98	78
2188 Male	126	1255	1	1219	1231	25	3	337	702	36	128	33	77	161	25	251	254	67	153	143	106	95	
	1221	1220	4	1221	1231	25	3	337	702	36	128	33	77	161	25	251	254	67	153	143	106	95	
	Female	8	8	1221	25	1231	25	3	337	702	36	128	33	77	161	25	251	254	67	153	143	106	95
2170 Male	120	1289	1	1257	1282	28	3	318	774	50	122	26	87	148	21	262	277	79	161	155	113	106	
	117	1175	2	1168	1282	28	3	318	774	50	122	26	87	148	21	262	277	79	161	155	113	106	
	Female	8	8	1168	28	1282	28	3	318	774	50	122	26	87	148	21	262	277	79	161	155	113	106
2301 Male	1288	1288	1	1252	1211	25	2	347	669	70	125	27	69	121	27	242	246	71	168	154	108	100	
	1061	1059	2	1051	1211	25	2	347	669	70	125	27	69	121	27	242	246	71	168	154	108	100	
	Female	4	4	1051	25	1211	25	2	347	669	70	125	27	69	121	27	242	246	71	168	154	108	100
2555 Male	1345	1337	3	1337	1337	6	1	308	682	76	150	39	92	173	33	342	349	61	157	25	157	92	
	1205	1202	2	1199	1337	6	1	308	682	76	150	39	92	173	33	342	349	61	157	25	157	92	
	Female	4	4	1199	6	1337	6	1	308	682	76	150	39	92	173	33	342	349	61	157	25	157	92
2630 Male	1384	1319	5	1319	1319	6	1	371	724	76	152	28	94	201	35	352	361	67	205	195	162	97	
	1267	1261	2	1261	1319	6	1	371	724	76	152	28	94	201	35	352	361	67	205	195	162	97	
	Female	4	4	1261	6	1319	6	1	371	724	76	152	28	94	201	35	352	361	67	205	195	162	97
2611 Male	1365	1362	2	1362	1362	3	4	380	745	69	134	37	92	168	28	420	331	69	168	165	181	106	
	1251	1251	2	1251	1362	3	4	380	745	69	134	37	92	168	28	420	331	69	168	165	181	106	
	Female	4	4	1362	3	1362	3	4	380	745	69	134	37	92	168	28	420	331	69	168	165	181	106
2634 Male	1374	1358	2	1337	1337	2	1	346	708	55	134	11	90	160	30	308	316	49	157	27	274	88	
	1213	1252	14	1258	1337	2	1	346	708	55	134	11	90	160	30	308	316	49	157	27	274	88	
	Female	17	17	1258	2	1337	2	1	346	708	55	134	11	90	160	30	308	316	49	157	27	274	88
2640 Male	1231	1226	1	1228	1229	13	1	319	695	51	130	35	83	173	39	252	253	66	153	23	152	96	
	1134	1122	1	1130	1229	13	1	319	695	51	130	35	83	173	39	252	253	66	153	23	152	96	
	Female	15	15	1228	13	1229	13	1	319	695	51	130	35	83	173	39	252	253	66	153	23	152	96
2476 Male	1346	1333	2	1330	1332	6	1	318	735	76	147	34	106	155	29	290	318	68	163	26	212	106	
	1128	1121	2	1118	1332	6	1	318	735	76	147	34	106	155	29	290	318	68	163	26	212	106	
	Female	4	4	1118	6	1332	6	1	318	735	76	147	34	106	155	29	290	318	68	163	26	212	106

TABLE NO. II.—*Births in 1887 by Quarters.*

	SEX.	COLOR.					CONDIT'N.					No. AT BIRTH.					PARENT NATIVITY.																						
		White.	Colored.	Unknown.	Legitimate.	Illegitimate.	Unknown.	Single.	Twins.	Triplets.	Unknown.	Both Amer.	Both Foreign.	Amer. Father, For. Mother.	For. Father Amer. Mother.	Not Given.	Minn.		N. E. States.		Other U. S.		British America		Great Britain.		Norway.		Sweden.		Ger-many.		Ireland.		Other Countr's		Unkn.		
																	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.		Fath.	Moth.
1ST QUAR. { 6037	Male... 3149	3143	6	..	3137	12	..	3008	50	1	..	766	1855	127	322	79	106	385	54	38	649	692	181	140	64	45	509	482	384	388	671	612	89	65	285	257	68	65	
	Female... 2871	2873	1	..	2860	14	..	2821	48	2	..	721	1620	142	202	49	217	302	72	52	578	607	147	149	48	28	473	464	332	330	585	505	77	52	255	239	79	86	
	Unkn. 14	13	..	1	12	1	1	14	..	..	..	3	3	..	4	2	..	2	1	1	4	6	2	..	2	..	1	..	..	..	2	..	..	..	..	..	2	2	
2ND QUAR. { 7292	Male... 3784	3782	2	..	3768	16	..	3704	78	2	..	1002	2145	176	375	86	257	464	80	63	840	839	200	168	59	48	520	520	552	538	780	697	104	72	315	291	77	64	
	Female... 3462	3454	8	..	3443	16	3	3412	46	4	..	922	1921	177	354	88	217	408	92	62	787	818	211	189	77	55	470	467	461	445	662	578	105	88	284	282	86	70	
	Unkn. 16	11	2	3	9	..	7	16	..	..	..	3	4	1	3	5	..	2	..	1	4	3	1	..	..	3	..	..	..	..	1	..	..	..	..	..	4	5	
3RD QUAR. { 7-26	Male... 4064	4048	10	6	4050	14	..	3969	95	..	..	1152	2151	212	445	104	278	542	97	72	983	991	215	170	81	69	582	568	518	505	795	692	107	80	315	288	93	87	
	Female... 3734	3728	4	2	3717	17	..	3659	71	..	4	1037	1981	177	427	112	280	514	101	70	887	899	206	186	86	48	562	506	480	475	719	625	110	77	263	247	100	87	
	Unkn. 25	..	..	..	21	..	7	25	2	..	..	6	15	1	1	5	3	1	..	..	4	6	..	..	..	..	..	3	3	4	3	8	7	..	..	2	3	4	5
4TH QUAR. { 7490	Male... 3945	3917	7	23	3925	20	..	3862	83	..	..	1013	2199	212	411	110	279	488	98	59	850	897	183	170	76	53	631	620	536	520	779	710	95	58	315	289	108	81	
	Female... 3505	3475	8	27	3486	18	1	3452	50	3	..	919	1888	185	365	118	257	459	76	49	797	821	176	146	60	42	507	500	471	454	655	592	97	66	304	283	105	93	
	Unkn. 40	38	..	4	20	..	11	..	..	..	..	14	10	4	4	8	3	5	1	..	13	12	1	..	..	..	4	5	1	1	7	..	..	..	3	4	7	9	
Total Males	14942	14880	29	14880	62	..	14633	306	3	..	38383	8350	727	1553	379	1040	1839	320	222	3322	3439	779	648	280	215	2242	2190	1990	1651	3025	2717	394	278	1230	1125	344	297		
Total Females	13575	13530	14	13506	65	4	13347	215	9	4	3023	7410	681	1488	417	971	1343	341	253	2699	3145	740	670	271	173	2002	1987	1744	1704	3381	2900	389	253	1116	1051	370	336		
Total Unknown	98	88	2	8	71	1	126	92	2	..	4	28	32	6	12	20	6	10	2	2	25	27	6	1	2	..	11	12	5	4	18	14	..	..	6	7	17	21	
Grand Total	28615	28398	41	28386	128	30	28072	523	12	8	6860	15792	1414	3003	816	1987	3012	672	467	6546	6611	1525	1313	553	388	4255	4139	3730	3659	5074	5625	783	558	2552	2183	728	654		

TABLE NO. III.

Parent nativity of children born in Minnesota during the year 1887.

NATIVITY OF PARENTS.	BIRTHS IN 1887.	
	Number.	Per ct. of total.
Nativities .....	28,615	100.00
Natives .....	7,590	26.06
Foreign .....	15,792	55.19
Foreign Father.....	3,003	10.41
Foreign Mother.....	1,414	4.94
Nativity Unknown.....	816	2.86
One or both parents natives .....	11,007	38.46
One or both parents foreign.....	20,209	70.58

TABLE NO. IV.

Parent nativity of children born in Minnesota during the years 1884, 1885 and 1887; comparison of rate per cent.

NATIVITY OF PARENTS.	1884.	1885.	1887.
Number of Births of all Nativities .....	35,031	37,477	28,615
	Per Ct.	Per Ct.	Per Ct.
American.....	25.37	25.3	26.06
Foreign.....	62.5	60.79	55.19
Foreign Father .....	8.19	9.05	10.41
Foreign Mother.....	3.94	4.84	4.94
Nativity Unknown .....			2.86
{ British America.....	5.37	4.13	5.3
{ Great Britain .....	2.		1.35
{ Norway.....	10.35	13.34	14.46
Foreign... { Sweden.....	12.05	11.58	12.
{ Germany .....	23.72	18.72	17.56
{ Ireland .....	3.98	3.32	1.95
{ Other Countries.....	5.03	9.70	7.62

There were reported in 1887, living:

Births .....	28,615	Per Ct.
Males.....	14,942	52.22
Females .....	13,575	47.44
Total Unknown .....	98	.34



*Plural Births.*—There were reported 523 twin children, of whom (one still-birth, a twin, not included):

Males .....	306
Females .....	215
Unknown sex .....	2

There were reported 12 children born triplets, of whom:

Males .....	3
Females .....	9

There were reported one instance of four at a birth, all females. It occurred in Newton township, Otter Tail county. The mother and all the children died.

*Illegitimate Births, 128, of whom:*

Males .....	62
Females .....	65
Unknown sex .....	1

## DEATHS.

The whole number of deaths returned as having occurred in the State during the year 1887, is 13,262 :

Males .....	7,093
Females .....	6,059
Unknown sex .....	110

Of the total deaths (13,262) I have been unable to include 252 (males 105, females 142, unknown sex 6) in the classification by causes of death. There were several reasons for this: 1st, the serious incompleteness of the first reports received under the new law; 2d, the duplication of returns by town clerks of the villages in their townships, for under the new law the health officer of such villages make the village returns and the town clerks account for the township outside the village, but under the old law the last accounted for both; 3d, my own uncertainty as to the forms and methods of compiling the returns. I do not think this difficulty will occur in 1888.

The population of the State in 1885 (census) was.....	1,117,798
The number of families (census).....	203,616
The population 1887 (estimated) was.....	1,328,054
Number of families (estimated).....	241,446

Three counties (unorganized), Beltrami, Cass and Itasca, with a combined estimated population of 1,761, made no reports in 1887.

Table No. V. shows population for 1885 and 1887; number of families in 1887; total deaths in 1887, by sex, months and counties.

TABLE NO. V.

COUNTY.	Population 1885, from Census.	Population 1887, Estimated.	No. Families 1887, Estimated.	Total Deaths 1887.	MONTH.											
					Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
AITKIN.....	1388	1648	299	7	1	0	0	1	1	0	2	0	0	0	0	2
	861	1021	.....	4	0	0	0	0	1	0	2	0	0	0	0	1
	527	627	.....	3	1	0	3	1	0	0	0	0	0	0	0	1
ANOKA.....	10089	11986	2179	151	8	9	9	19	21	17	16	3	10	10	12	17
	5262	6232	.....	68	3	5	5	9		5	4	1	7	7	7	6
	4827	5754	.....	80	5	4	4	9	11	11	12	2	3	3	5	11
BECKER.....	7433	8830	1605	62	1	8	4	5	5	1	6	8	3	8	7	6
	3872	4591	.....	38	0	4	2	4	4	0	5	4	1	5	5	4
	3561	4239	.....	24	1	4	2	1	1	1	1	4	2	3	2	2
BENTON.....	4721	5598	1018	50	5	5	4	6	2	4	5	5	5	1	6	2
	2517	2967	.....	23	3	3	1	2	0	3	3	3	3	0	1	1
	2204	2631	.....	27	2	2	3	4	2	1	2	2	2	1	5	1
BIGSTONE..	4697	5579	1015	47	10	1	6	6	3	2	4	4	3	5	1	2
	2583	3068	.....	23	2	1	3	6	0	2	2	2	2	2	1	0
	2114	2511	.....	24	8	0	3	0	3	0	2	2	1	3	0	2
BLUE EARTH..	26462	31438	5716	218	4	5	22	22	19	18	25	25	27	20	14	17
	14033	16662	.....	123	2	2	14	12	10	12	17	15	15	14	4	5
	12429	14776	.....	90	2	3	7	9	8	5	7	10	12	6	10	11
BROWN.....	13976	16593	3017	147	14	7	16	12	8	14	8	15	12	14	10	17
	7253	8628	.....	85	5	3	10	2	4	9	6	10	7	10	8	11
	6723	7965	.....	62	9	4	6	10	4	5	2	5	5	4	2	6
CARLTON.....	3189	3787	688	55	1	3	2	2	0	7	2	9	5	5	10	9
	2084	2491	.....	34	1	3	2	2	0	5	1	4	2	2	3	9
	1105	1296	.....	21	0	0	0	0	0	2	1	5	3	3	7	0
CARVER.....	15965	18967	3448	199	17	15	9	20	12	15	26	19	17	15	15	19
	8496	10052	.....	103	10	9	3	8	5	9	16	11	9	8	8	7
	7469	8915	.....	94	7	6	6	11	7	6	10	8	8	7	6	12
CHIPPEWA.....	6561	7804	1419	54	9	6	2	3	5	0	7	5	5	2	6	4
	3523	4136	.....	29	3	4	0	2	1	0	5	3	4	1	4	2
	3038	3668	.....	23	5	2	2	1	4	0	2	2	1	1	1	2

TABLE NO. V.—*Continued.*

COUNTY.	Population 1885, from Census.	Population 1887, Estimated.	No. Families, Estimated.	Total Deaths, 1887.	MONTH.											
					January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
CHISAGO .....	9765	11590	2107	133	8	9	11	9	3	8	26	10	12	9	15	13
	5272	6258	.....	80	6	7	6	4	3	5	13	7	6	6	8	9
	4493	5332	.....	53	2	2	5	5	0	3	13	3	6	3	7	4
CLAY .....	10362	12201	2218	64	4	2	6	7	2	6	4	2	8	9	4	10
	5522	6710	.....	36	3	1	2	5	2	5	3	0	4	5	4	2
	4640	5491	.....	28	1	1	4	2	0	1	1	2	4	4	0	8
COTTONWOOD ..	5894	7002	1273	51	1	3	7	4	1	2	4	5	7	8	4	5
	3178	3711	.....	6	1	2	3	3	0	2	3	2	5	2	2	1
	2716	3291	.....	25	0	1	4	1	1	0	1	3	2	6	2	4
CROW WING ...	8743	10386	1888	26	0	0	0	0	4	1	4	3	6	3	3	2
	5123	5637	.....		0	0	0	0	4	0	3	1	2	2	2	1
	3615	4749	.....	11	0	0	0	0	0	1	1	2	4	1	1	1
DAKOTA .....	18590	22086	4015	211	16	16	10	13	14	15	35	28	15	15	22	12
	9959	11705	.....	115	8	6	4	5	4	8	21	18	9	12	12	8
	8631	10381	.....	94	8	10	5	8	10	6	14	10	6	3	10	4
DODGE.....	10487	12458	2265	93	3	5	6	6	13	4	7	14	11	9	6	9
	5573	6502	.....	46	0	4	3	2	6	3	3	6	6	4	4	5
	4914	5956	.....	47	3	1	3	4	7	1	4	8	5	5	2	4
DOUGLAS.....	12924	15354	2790	106	4	9	12	4	18	3	8	10	13	10	7	8
	6746	8137	.....	67	2	2	7	2	13	2	5	8	8	5	6	6
	6178	7217	.....	37	2	7	4	2	5	1	3	2	4	4	1	2
FARIBAULT....	15163	18004	3273	93	1	4	8	18	9	7	5	11	6	8	7	9
	8157	9542	.....	47	1	2	3	9	4	5	0	5	2	6	5	5
	7006	8462	.....	45	0	2	5	9	4	2	5	6	4	2	2	4
FILLMORE .....	26677	31693	5762	259	15	29	37	37	24	13	18	9	16	17	23	21
	13650	16163	.....	141	6	17	18	20	14	8	11	3	7	11	11	15
	13027	15530	.....	114	9	12	17	17	10	5	7	6	9	6	10	6
FREEBORN .....	17364	20629	3750	130	5	5	15	14	3	11	13	17	5	15	13	14
	9254	10933	.....	80	2	3	10	3	2	4	9	13	3	8	6	11
	8110	9696	.....	50	3	2	5	5	1	7	4	4	2	7	7	3

TABLE NO. V.—Continued.

COUNTY.	Population 1885, from Census.	Population 1887, Estimated.	No. Families 1887, Estimated.	Total Deaths, 1887.	MONTH.											
					January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
GOODHUE.....	31113	36965	6720	273	18	15	15	25	31	21	24	30	22	22	22	28
	16363	19221	.....	147	7	11	8	12	17	15	15	17	11	9	12	13
	14750	17744	.....	125	11	4	7	13	13	6	9	13	11	13	10	15
GRANT.....	5197	6174	1122	50	4	2	4	5	4	1	6	7	3	5	2	7
	2843	3333	.....	25	2	0	3	3	2	0	4	6	1	0	0	4
	2354	2841	.....	25	2	2	1	2	2	1	2	1	2	5	2	3
HENNEPIN.....	148737	76714	32129	2185	13	8	5	197	214	280	318	267	232	250	181	220
	84098	98659	.....	1156	8	4	1	93	120	155	161	154	121	139	89	111
	64639	78055	.....	998	5	4	4	99	84	122	152	110	109	110	91	108
HOUSTON.....	15482	18393	3344	203	18	18	14	12	12	15	13	21	24	17	25	14
	7992	9380	.....	111		7	9	8	6	7	4	10	14	12	12	9
	7490	9013	.....	92	5	11	5	4	6	8	9	11	10	5	13	15
HUBBARD.....	853	1012	184	5	0	1	1	0	0	0	0	0	2	1	0	0
	477	556	.....	1	0	0	1	0	0	0	0	0	0	0	0	0
	376	456	.....	4	0	1	0	0	0	0	0	0	2	1	0	0
ISANTI.....	7031	8352	1518	102	6	6	6	9	4	2	15	17	7	8	11	11
	3865	4510	.....	45	4	3	3	3	2	2	6	5	3	5	4	5
	3166	3842	.....	56	2	3	3	6	2	0	9	12	4	3	7	5
JACKSON.....	6110	7258	1319	61	1	3	3	6	4	2	7	11	6	6	4	8
	3197	3774	.....	28	0	3	1	3	2	1	3	5	5	4	1	0
	2913	3484	.....	33	1	0	2	3	2	1	4	6	1	2	3	8
KANABEC.....	1109	1316	239	19	1	1	0	3	4	0	0	3	0	2	3	2
	621	736	.....	11	1	0	0	2	3	0	0	3	0	1	1	0
	488	550	.....	8	0	1	0	1	1	0	0	0	0	1	2	2
KANDIYOHI....	12849	15265	2775	118	11	8	15	13	6	10	8	19	6	8	8	6
	6821	8090	.....	61	7	4	8	6	2	4	4	11	4	6	2	3
	028	7175	.....	57	4	4	7	7	4	6	4	8	2	2	6	3
KITTSON.....	3462	4112	747	23	2	4	2	5	1	1	1	4	1	0	1	1
	2040	2425	.....	11	2	2	0	1	1	1	1	3	0	0	1	0
	1420	1687	.....	12	0	2	2	4	0	0	0	1	1	0	0	1

TABLE NO. V.—Continued.

COUNTY.	Population 1885 from Census,	Population 1887, Estimated.	No. Families 1887, Estimated.	Total Deaths, 1887.	MONTH.											
					January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
LACQUIPARLE	7842	8887	1616	88	9	8	5	11	6	6	6	5	9	9	10	4
	4293	4798	.....	50	5	6	3	4	1	4	5	5	3	6	7	1
	3549	4089	.....	38	4	2	2	7	5	2	1	0	6	3	3	3
LAKE.....	453	537	97	4	0	0	1	0	0	0	0	2	0	1	0	0
	292	343	.....	4	0	0	1	0	0	0	0	2	0	1	0	0
	161	194	.....	0	0	0	0	0	0	0	0	0	0	0	0	0
LESUEUR.....	18559	22049	4009	215	17	18	30	25	11	11	19	16	19	16	25	8
	9364	11024	.....	118	10	15	20	14	5	2	8	6	10	8	15	5
	9195	11025	.....	96	7	3	10	11	6	9	10	10	9	8	10	3
LINCOLN,.....	4362	5181	923	47	2	0	4	8	3	2	5	9	5	3	4	2
	2325	2735	.....	20	0	0	2	4	1	1	2	4	2	2	2	0
	2037	2446	.....	27	2	0	2	4	2	1	3	5	3	1	2	2
LYON. ....	7936	9428	1714	64	2	3	4	5	5	4	6	12	7	7	4	5
	4302	5091	.....	36	1	2	2	2	3	1	5	7	5	4	2	2
	3634	4337	.....	27	1	1	2	2	2	3	1	5	2	3	2	3
MCLEOD.....	15311	18189	3307	105	7	7	9	6	8	5	15	9	8	16	9	6
	8075	9458	.....	64	4	5	5	3	2	4	10	6	5	11	6	3
	7236	8731	.....	41	3	2	4	3	6	1	5	3	3	5	3	3
MARSHALL,....	5560	6605	1201	64	7	5	2	3	2	6	8	7	9	5	6	4
	3246	3830	.....	26	2	1	1	1	1	4	5	3	3	3	0	2
	2314	2775	.....	38	5	4	1	2	1	2	3	4	6	2	6	2
MARTIN.....	6426	7634	1388	53	0	3	7	8	4	3	3	6	6	6	3	4
	3373	3969	.....	26	0	2	5	2	1	2	1	2	5	4	1	1
	3053	3665	.....	27	0	1	2	6	3	1	2	4	1	2	2	3
MEEKER .....	14501	17228	3132	141	7	13	15	14	14	5	11	10	17	13	12	10
	7615	8958	.....	77	3	7	9	10	10	3	6	3	6	7	7	6
	6886	8270	....	62	4	6	6	4	4	2	5	7	9	6	5	4
MILLE LACS ...	1897	2253	409	25	1	4	2	1	4	2	3	0	4	1	2	0
	1125	1330	.....	17	0	4	1	0	4	0	2	0	3	1	2	0
	771	923	.....	8	1	1	1	1	0	2	1	0	1	0	0	0



TABLE NO. V.—Continued.

COUNTY.	Population 1885, from Census.	Population 1887, Estimated.	No. Families 1887, Estimated.	Total Deaths, 1887.	MONTH.											
					January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
MORRISON .....	9406	11174	2031	82	8	4	6	6	6	0	7	13	7	7	4	14
	5135	6033	.....	37	4	2	1	3	3	0	2	5	4	2	2	9
	4271	5141	.....	45	4	2	5	3	3	0	5	8	3	5	2	5
MOWER .....	15277	18149	3299	128	10	6	11	9	8	11	18	17	8	12	6	12
	7975	9437	.....	68	5	4	5	6	4	5	9	10	4	7	2	7
	7302	8712	.....	60	5	2	6	3	4	6	9	7	4	5	4	5
MURRAY .....	5046	5995	1090	57	2	3	4	9	3	5	8	8	3	7	3	2
	2688	3177	.....	29	0	2	2	5	2	2	6	3	2	3	1	1
	2358	2818	.....	27	2	1	2		1	2	2	5	1	4	2	1
NICOLLET .....	13434	15960	2901	177	6	7	12	12	19	13	17	12	14	34	9	22
	6894	8139	.....	103	4	2	6	6	11	6	9	7	9	22	7	14
	6540	7821	.....	74	2	5	6	6	8	7	8	5	5	12	2	8
NOBLES .....	5639	6699	1218	54	4	2	1	8	2	1	6	7	6	7	5	5
	3082	3548	.....	32	3	2	0	5	0	0	4	4	5	3	3	3
	2607	3151	.....	21	1	0	1	3	1	1	2	3	1	4	2	2
NORMAN .....	8295	9108	1654	106	5	7	13	9	11	9	10	9	13	6	9	5
	4537	4918	.....	54	3	2	8	2	7	3	7	3	8	3	6	2
	3758	4190	.....	51	2	5	5	7	4	6	3	6	4	3	3	3
OLMSTED .....	20518	24377	4432	227	11	15	22	15	19	20	18	22	16	28	15	26
	10678	12676	.....	134	7	5	14	9	9	13	11	13	9	17	10	17
	9840	11701	.....	90	4	10	8	5	10	7	7	7	7	11	5	9
OTTER TAIL ...	31520	37012	6729	350	32	33	32	20	23	16	15	49	34	29	34	33
	16941	19616	.....	170	17	14	20	7	9	6	9	22	15	16	17	18
	14579	17396	.....	172	14	18	12	11	14	10	6	25	19	11	17	15
PINE .....	2186	2596	472	25	3	1	0	1	2	2	6	5	1	3	1	0
	1283	1505	.....	17	2	1	0	0	1	1	4	4	1	3	0	0
	903	1091	.....	8	1	0	0	1	1	1	2	1	0	0	1	0
PIPESTONE ...	3956	4700	854	19	0	0	3	2	3	1	0	1	6	1	2	0
	2018	2397	.....	9	0	0	1	0	1	0	0	1	4	0	2	0
	1988	2303	.....	10	0	0	2	2	2	1	0	0	2	1	0	0

TABLE NO. V.—Continued.

COUNTY.	Population 1885, from Census.	Population 1887, Estimated.	No. Families 1887, Estimated.	Total Deaths 1887	MONTH.											
					January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
POLK.....	23475	27889	5034	285	29	32	28	25	25	18	18	24	20	24	15	27
	13073	15338	.....	130	10	16	13	10	13	10	9	10	12	9	6	12
	10402	12551	.....	155	19	16	15	15	12	8	9	14	8	15	9	15
POPE.....	8707	10344	1881	60	3	5	6	6	10	4	2	5	2	6	5	6
	4644	5482	.....	23	0	3	0	4	5	4	0	0	0	1	4	2
	4062	4862	.....	37	3	2	6	2	5	0	2	5	2	5	1	4
RAMSEY.....	116227	138088	25107	2275	148	164	182	183	156	235	327	229	175	172	145	164
	64591	75948	.....	1237	81	99	87	93	86	132	180	120	96	80	84	99
	51636	62140	.....	1022	67	65	87	90	70	99	142	107	79	90	61	65
REDWOOD.....	6488	7707	1401	60	0	5	2	6	1	4	3	4	16	5	7	7
	3405	4007	.....	29	9	2	1	3	0	3	1	2	9	3	3	2
	3083	3700	.....	31	0	3	1	3	1	1	2	2	7	2	4	5
RENVILLE.....	13153	15626	2841	159	6	8	14	12	13	9	11	27	16	14	17	12
	6893	8125	.....	88	4	3	6	8	9	6	7	13	8	11	9	4
	6260	7501	.....	71	2	5	8	4	4	3	4	14	8	3	8	8
RICE.....	24941	29631	5387	222	12	10	24	19	28	14	24	26	16	18	18	13
	12926	15111	.....	116	5	4	12	9	18	8	11	11	9	11	13	5
	12015	14521	.....	99	7	4	11	10	10	6	11	14	7	7	4	8
ROCK.....	5239	6323	1149	52	3	0	5	7	4	2	9	8	3	6	2	3
	2904	3477	.....	24	2	0	3	4	2	1	4	5	0	2	0	1
	2335	2846	.....	28	1	0	2	3	2	1	5	3	3	4	2	2
ST. LOUIS.....	20453	24299	4418	410	2	1	19	45	26	42	55	45	38	44	40	53
	12308	14579	.....	250	2	0	11	25	13	22	24	33	23	31	28	39
	8145	9720	.....	160	0	1	8	20	13	20	31	13	15	13	12	14
SCOTT.....	14181	16848	3063	153	18	5	22	11	9	2	20	13	15	16	14	8
	7481	8760	.....	80	12	1	14	5	7	1	11	6	7	9	6	4
	6700	8088	.....	70	6	4	8	6	2	1	9	7	8	7	8	4
SHERBURNE...	5647	6708	1219	39	1	4	1	3	5	2	9	3	0	2	3	6
	2905	3421	.....	17	1	2	1	2	2	1	2	1	0	0	2	2
	2742	3287	.....	22	0	2	0	1	2	1	7	2	0	2	1	4

TABLE NO. V.—Continued.

COUNTY.	Population 1885, from Census.	Population 1887, Estimated.	No. Families 1887, Estimated.	Total Deaths 1887.	MONTH.											
					January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
SIBLEY .....	13126	15595	2835	144	17	11	14	7	10	12	13	16	11	9	13	11
	8421	8421	.....	76	11	8	9	3	2	6	7	8	4	6	6	6
	7174	7174	.....	63	5	3	4	4	8	6	6	7	7	3	7	3
STEARNS .....	28712	34112	6202	296	27	11	25	23	27	29	30	24	32	23	24	21
	15055	17738	.....	172	15	6	15	17	22	13	14	13	19	10	16	12
	13657	16374	.....	122	12	5	10	6	5	16	16	11	13	12	8	8
STEELE .....	12733	15127	2750	105	18	7	13	9	13	9	8	7	7	10	4	0
	6287	7412	.....	47	6	2	6	5	6	2	5	4	3	5	3	0
	6446	7715	.....	58	12	5	7	4	7	7	3	3	4	5	1	0
STEVENS .....	4511	5358	974	48	6	5	2	8	2	4	5	8	2	3	0	3
	2467	2893	.....	23	2	1	1	2	2	3	3	5	1	2	0	1
	2044	2465	.....	25	4	4	1	6	0	1	2	3	1	1	0	2
SWIFT .....	8373	9947	1808	93	8	8	4	4	8	7	8	15	3	9	5	14
	4491	5271	.....	51	6	5	1	2	4	5	2	9	1	4	2	10
	3882	4676	.....	42	2	3	3	2	4	2	6	6	2	5	3	4
TODD .....	9643	11455	2082	95	11	11	8	5	4	5	5	12	6	6	9	13
	5162	6071	.....	51	6	5	4	2	3	3	1	5	3	4	6	9
	4481	5384	.....	43	5	6	4	3	1	2	4	7	3	2	3	3
TRAVERSE .....	2860	3397	6176	42	3	1	0	2	3	4	4	7	1	9	3	5
	1578	1868	.....	24	2	0	0	0	3	4	4	5	0	3	2	1
	1282	1529	.....	18	1	1	0	2	0	0	0	2	1	6	1	4
WABASHA .....	17999	21383	3887	160	11	12	15	13	11	13	15	16	12	12	15	15
	9234	10905	.....	75	4	6	5	6	7	8	7	7	6	5	7	7
	8765	10478	.....	83	7	6	9	7	4	5	8	8	6	7	8	8
WADENA .....	3565	4234	769	32	2	2	1	3	3	4	4	4	0	3	4	2
	1926	2286	.....	14	1	1	0	2	2	1	3	0	0	0	2	2
	1639	1948	.....	18	1	1	1	1	1	3	1	4	0	3	2	0
WASECA .....	13342	15850	2881	112	10	13	17	7	7	5	6	13	7	8	6	13
	6971	8242	.....	55	5	8	10	5	3	1	0	10	1	2	2	8
	6371	7608	.....	57	5	5	7	2	4	4	6	3	6	6	4	5

TABLE NO. V.—Continued.

COUNTY.	Population 1885, from Census.	Population 1887, Estimated.	No. Families 1887, Estimated.	Total Deaths, 1887.	MONTH.											
					January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
WASHINGTON...	29751	35346	6426	322	14	14	28	23	28	33	40	39	25	30	20	28
	18163	21561	.....	187	12	3	17	13	14	21	19	25	12	20	15	16
	11588	13785	.....	134	2	11	11	10	14	11	21	14	13	10	5	12
WATONWAN....	5995	7122	1295	50	3	2	6	3	2	3	3	10	5	3	5	5
	3204	3774	.....	31	1	2	4	2	1	2	2	5	3	1	4	4
	2791	3348	.....	19	2	0	2	1	1	1	1	5	2	2	1	1
WILKIN.....	3734	4436	805	27	0	0	1	0	3	3	3	3	4	5	1	4
	2060	2439	.....	12	0	0	0	0	2	0	1	2	3	4	0	0
	1674	1997	.....	15	0	0	1	0	1	3	2	1	1	1	1	4
WINONA .....	31928	37932	6897	475	36	27	32	44	26	47	52	51	35	40	41	44
	16458	19345	.....	250	17	12	13	23	9	28	34	32	22	25	20	15
	15470	18587	.....	225	19	15	19	21	17	19	18	19	13	15	21	29
WRIGHT .....	22790	27076	4925	244	23	10	20	20	17	16	14	34	20	16	15	39
	12037	14079	.....	122	10	7	10	11	10	7	7	15	9	10	6	20
	10752	12997	.....	121	13	3	10	9	7	9	6	19	11	6	9	19
YELLOW MED.	7863	9341	1698	76	2	3	4	6	6	11	6	16	3	7	3	9
	4175	4950	.....	38	1	2	2	5	4	6	0	7	3	3	0	5
	3688	4391	.....	38	1	1	2	1	2	5	6	9	0	4	3	4

TABLE VI.

Table showing deaths by months, of those classified and unclassified, and total:

MONTH.	Deaths Classified.	Deaths Unclassified.	Total Deaths.	Per Ct. of Total.
January .....	745	2	747	5.63
February .....	702	15	717	5.41
March .....	909	18	927	6.86
April .....	1,126	24	1,150	8.68
May .....	1,034	13	1,047	7.9
June .....	1,111	28	1,139	8.59
July .....	1,463	24	1,487	11.22
August .....	1,449	10	1,459	11.1
September .....	1,124	31	1,155	8.71
October .....	1,196	17	1,213	9.15
November .....	1,008	31	1,039	7.83
December .....	1,143	39	1,182	8.92
	13,010	252	13,262	100.00

It should be remembered that as the law went into effect March 7th, the returns for the first three months of the year are incomplete.

TABLE VII.

Number and percentage of deaths of males and females from all causes in 1883, 1884, 1885, 1886 and 1887:

YEAR.	NUMBER.		PERCENTAGE.				
	Males.	Females.	Males.	Females.	Excess of Males. Females.		
1883.....	6,299	5,297	54.32	45.68	8.64	.....	
1884.....	6,892	5,842	54.12	45.88	8.24	.....	
1885.....	6,330	5,400	53.96	46.04	7.92	.....	
1886.....	7,233	6,246	53.66	46.34	7.32	.....	
1887.....	7,093	6,059	53.93	46.07	7.86	.....	
			1883.	1884.	1885.	1886.	1887.
Females to 100 males.....			84.09	84.76	85.3	86.35	85.42

TABLE VIII.

Table exhibiting the number of deaths by sex, and the percentage and proportion of all deaths to population for 1883, 1884, 1885, 1886 and 1887, unknown sex excluded; population, estimated, for each year except census year 1885:

YEAR.	Popula- tion.	NUMBER.			PERCENTAGE.		
		Males.	Females.	Total.	Rates per 1,000.	Percentage to Population	Now Liv- ing to or Dead.
1883..	1,011,122	6,299	5,297	11,596	11.46	1.146	87.19
1884..	1,017,798	6,892	5,842	12,734	11.35	1.135	88.04
1885..	1,117,798	6,330	5,400	11,730	10.49	1.049	95.29
1886..	1,218,399	7,233	6,246	13,479	11.06	1.106	93.92
1887..	1,328,054	7,093	6,059	13,152	9.9	.99	100.9



TABLE IX.

Parent nativity of persons deceased in 1887, including unknown sex (104), but excluding those not classified, under the causes of death (252):

PARENTAGE.	NUMBER.	Percentage of Total Deaths.
Total . . . . .	13,010	100.00
Both American . . . . .	2,419	18.59
Both Foreign . . . . .	7,786	59.85
Foreign Father and American Mother . . .	551	4.24
American Father and Foreign Mother . . .	260	1.99
Unknown . . . . .	1,994	15.33

TABLE NO. X.

Table of Deaths from specified classes of diseases, and the percentage of each class to total deaths in 1887:

CLASSES.	Total.	Male.	Female.	Percentage to Total Deaths.
Zymotic . . . . .	4,009	2,006	1,989	30.81
Constitutional . . . . .	1,604		870	12.33
Local . . . . .	3,379	1,802	1,464	25.97
Developmental . . . . .	2,785	1,559	1,159	21.41
Violent Deaths . . . . .	679	531	146	5.22
Ill-defined and not specified causes	554	259	289	4.26

TABLE NO. XI.

Table exhibiting the percentage of deaths from all causes to population, and the percentage of deaths from each class of causes to deaths from all causes for the years 1882, 1883, 1884, 1885 and 1887:

CLASSES.	1882	1883	1884	1885	1887
Per cent. of all deaths to population . . . .	1.34	1.15	1.25	1.05	0.98
Zymotic . . . . .	38.14	29.25	30.45	32.11	30.81
Constitutional . . . . .	12.24	13.88	14.40	13.30	12.33
Local . . . . .	22.28	27.45	21.04	21.92	25.97
Developmental . . . . .	15.08	11.86	19.37	22.18	21.41
Violent deaths . . . . .	4.74	5.89	5.05	4.43	5.22
Ill-defined and not specified causes . . . .	4.58	11.66	9.70	7.33	4.26

TABLE NO. XII.—Deaths of all ages from specified causes, by months. Number of deaths from specified causes under 5 years, and per cent. of total deaths. Ages of dead under 5 years, by years.

DISEASE.	Total Deaths of all Ages.	MONTH.												Total Under 5 Years.	Per Cent. of Total Deaths.	AGES.					
		January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.			Under 1 Year.	1 Year to 2 Years.	2 Years to 3 Years.	3 Years to 4 Years.	4 Years to 5 Years.	5 Years to * 1 Year.
Miasmatic.																					
Measles .....	185	4	17	27	32	37	28	15	8	3	4	5	5	136	73.51	53	42	12	7	8	14
Scarlet Fever .....	196	17	26	27	21	15	17	9	13	7	10	16	18	182	67.25	14	21	28	17	14	38
Diphtheria .....	788	59	48	28	30	35	62	34	63	83	100	110	136	337	42.89	44	52	63	76	71	31
Quinsy, Mumps .....	20	1	1	1	1	1	1	1	5	2	3	4	1	11	55.	3	1	3	2	1	1
Croup .....	283	18	21	13	23	7	10	16	14	27	48	43	43	285	83.18	82	43	37	31	19	23
Pertussis .....	56	2	1	3	3	5	1	10	103	8	7	4	5	53	94.64	39	8	1	.....	2	8
Typhoid Fever .....	717	37	15	19	18	21	32	35	103	151	158	75	53	44	6.13	5	11	7	6	4	11
Total .....	2245	138	128	118	125	121	150	120	216	281	330	257	261	948	42.22	240	178	151	139	119	121
DIARRHOEAL.																					
Dysentery .....	65	0	2	0	3	2	1	17	25	10	3	2	0	48	73.85	27	12	2	1	3	3
Diarrhoea & Cholera Morbus .....	69	0	4	0	0	3	3	27	21	5	3	2	1	14	20.29	8	4	.....	.....	2	3
Diarrhoeal Dis. of Children .....	1189	3	9	12	29	26	175	406	330	134	39	10	16	1183	99.5	958	182	34	22	8	29
Total .....	1323	3	15	12	32	31	179	450	376	149	45	14	17	1245	94.1	993	148	36	23	13	35
VENEREAL.																					
Syphilis .....	6	.....	.....	.....	1	.....	.....	.....	.....	3	.....	.....	2	3	50.	2	.....	.....	1	.....	.....
SEPTIC.																					
Erysipelas .....	115	5	6	10	10	12	11	13	6	5	11	10	16	38	33.04	29	1	4	1	3	.....
CONSTITUTIONAL.																					
Rheumatism .....	78	1	8	7	7	13	5	9	5	5	7	6	5	5	6.41	1	.....	1	1	1	2
Phthisis .....	1125	16	60	99	117	139	83	101	106	103	103	86	96	43	3.82	19	11	6	2	1	4
Other Tubercular Diseases .....	120	3	5	8	13	16	9	21	14	11	7	4	4	68	56.66	32	20	5	6	3	2
Anæmia .....	55	2	3	1	6	2	8	14	4	4	4	2	5	4	.....	3	1	.....	.....	.....	.....
Total .....	1378	62	76	115	143	170	105	145	129	89	121	98	125	120	8.7	55	32	12	9	6	6



TABLE XIII.

Number of deaths at a specified age, and percentage of each to total deaths in 1887:

AGE.	NUMBER.	Percentage of Total Deaths.
Under 5 years .....	5,920	45.46
From 5 to 10 years .....	692	5.3
From 10 to 15 years .....	373	2.87
From 15 to 20 years .....	542	4.17
From 20 to 30 years .....	1,359	10.44
From 30 to 40 years .....	882	6.77
From 40 to 50 years .....	670	5.15
From 50 to 60 years .....	616	4.73
From 60 to 70 years .....	751	5.77
From 70 to 80 years .....	621	4.77
Over 80 years .....	357	2.75
Unknown .....	227	1.75

TABLE NO. XIV.

Showing mortality from certain Zymotic diseases for years 1882, 1883, 1884, 1885 and 1887:

DISEASE.	1882	1883	1884	1885	1887
Smallpox.....	76	38	.....	38	.....
Measles .....	105	57	74	69	185
Scarlatina .....	421	188	179	160	196
Diphtheria.....	1,602	1,374	1,211	1,138	788
Croup .....	282	297	217	198	283
Whooping Cough.....	118	45	105	98	56
Typhoid Fever.....	812	379	420	396	717
Erysipelas.....	51	51	34	29	115†
Puerperal Diseases.....	26	38	54	49	301*
Dysentery .....	59	45	121	116	65
Diarrhoea and Cholera Morbus.....	100	109	211	195	69
Cholera Infantum.....	704	320	810	798	1,189‡

\* Includes puerperal fever and the accidents, and sequelæ of the puerperal state, which it has been impossible to separate in a large proportion of the returns.

† Includes Phagedænia, Pyæmia and Septicæmia.

‡ Includes the diarrhoeal affections of children under 5 years of age during the summer months.

§ From reports to the State Board of Health.



[illegible]



[illegible]



[illegible]

\* Exact year between 1 and 5 years not known.

The following tables are from the census of 1885 for the purpose of showing the relation of population to territory occupied and its subdivision into townships, villages and cities. Population to square miles can be reduced to population to acres by multiplying by 640. The population of the State as a whole in 1887 is, as already given, estimated at 1,328,054, and the death rate for that year is figured on that estimate. I have not ventured to apply the same rule to populations of counties, townships, villages and cities, which anyone can do, who chooses, by increasing 1885 returns by 9 per cent. per annum.

TABLE NO. XVI.

Showing the population of the State, by grand divisions, in counties, cities, villages and townships from the census of 1885.

NORTHWESTERN DIVISION, CENSUS OF 1885.

County.	Number of sq. miles.	POPULATION.				Number of persons to sq. mile.
		Total	Township.	Village.	City.	
Becker.....	1,445.41	7,433	3,560	1,873	.....	5.14
Clay.....	1,067.37	12,302	8,826	1,000	2,536	11.58
Hubbard.....	585.40	853	853	.....	.....	1.4
Kittson.....	2,164.75	3,462	3,113	349	.....	1.6
Marshall.....	1,675.04	5,560	4,696	864	.....	3.3
Norman.....	1,458.32	8,335	7,615	720	.....	5.7
Otter Tail.....	2,240.20	31,520	25,453	1,783	4,284	14.07
Polk.....	3,159.18	23,475	18,199	1,213	4,063	7.4
Wadena.....	722.78	3,565	2,119	1,446	.....	4.9
Wilkin.....	751.04	3,734	2,738	996	.....	4.9
Total.....	15,269.49	100,299	79,172	10,244	10,883	6.5

NORTHEASTERN DIVISION, CENSUS OF 1885.

County.	Number of sq. miles.	POPULATION.				Number of persons to sq. mile.
		Total.	Township.	Village.	City.	
Aitkin.....	1,994.97	1,388	683	705	.....	.7
Anoka.....	444.98	10,080	5,460	.....	4,629	22.7
Benton.....	406.36	4,721	3,297	1,424	.....	11.3
Carlton.....	867.19	3,189	1,482	1,707	.....	3.6
Crow Wing.....	951.50	8,743	1,633	.....	7,110	9.18
Chisago.....	451.66	9,765	7,292	2,473	.....	21.6
Isanti.....	457.81	7,031	6,829	202	.....	15.3
Kanabec.....	541.99	1,109	1,109	.....	.....	2.04
Lake.....	2,378.94	453	453	.....	.....	.7
Mille Lacs.....	688.19	1,897	1,897	.....	.....	2.78
Morrison.....	1,089.09	9,406	8,182	1,224	.....	8.6
Pine.....	1,144.50	2,186	971	1,215	.....	1.5
Ramsey.....	187.15	116,227	4,093	737	111,397	621.03
Sherburne.....	498.88	5,647	4,412	1,235	.....	12.04
St. Louis.....	6,611.75	20,453	2,484	551	17,418	3.09
Washington.....	430.01	29,751	12,705	609	16,437	69.18
Total.....	19,484.97	232,055	69,982	12,082	156,991	11.9



## CENTRAL DIVISION, CENSUS OF 1885.

County.	Number of sq. miles.	POPULATION.				Number of persons to sq. mile.
		Total.	Township.	Village.	City.	
Big Stone.....	536.31	4,697	3,515	1,182	.....	8.7
Carver.....	376.50	15,965	9,956	6,009	.....	42.4
Chippewa.....	594.21	6,561	5,411	1,150	.....	11.04
Douglas.....	722.66	12,924	12,071	853	.....	17.8
Grant.....	578.28	5,197	4,576	621	.....	8.9
Hennepin.....	621.47	148,737	18,348	1,189	129,200	239.3
Kandiyohi.....	867.14	12,849	11,128	1,721	.....	14.8
McLeod.....	507.45	15,811	13,021	2,290	.....	30.1
Mower.....	633.62	14,501	13,015	1,486	.....	22.8
Nicollet.....	464.61	14,434	9,898	.....	4,036	31.06
Pope.....	722.69	8,707	7,752	955	.....	12.04
Renville.....	981.81	13,153	12,353	800	.....	13.4
Sibley.....	597.73	13,126	11,315	1,811	.....	21.9
Stearns.....	1,330.07	28,712	23,802	550	4,360	21.5
Stevens.....	571.48	4,511	3,019	1,492	.....	7.9
Swift.....	757.73	8,373	6,582	1,791	.....	11.05
Todd.....	1,008.34	9,643	8,937	706	.....	9.5
Traverse.....	581.83	2,860	2,660	200	.....	4.9
Wright.....	713.97	22,790	19,267	2,523	.....	31.9
Total.....	13,167.40	363,051	197,126	28,329	137,596	27.5

## SOUTHWESTERN DIVISION, CENSUS OF 1885.

County.	Number of sq. miles.	POPULATION.				Number of persons to sq. mile.
		Total.	Township.	Village.	City.	
Brown.....	616.75	13,975	8,971	1,670	3,335	22.6
Cottonwood.....	650.38	5,894	4,903	991	.....	9.06
Jackson.....	722.66	6,110	5,222	888	.....	8.3
Lac qui Parle.....	771.93	7,842	6,742	1,100	.....	10.1
Lincoln.....	541.99	4,362	3,971	391	.....	8.04
Lyon.....	720.66	7,936	5,382	2,554	.....	11.0
Martin.....	723.88	6,426	5,355	1,071	.....	8.9
Murray.....	721.56	5,046	4,855	191	.....	6.9
Nobles.....	727.66	5,639	3,810	1,829	.....	7.7
Pipestone.....	493.27	3,956	2,679	1,277	.....	8.6
Redwood.....	893.83	6,488	5,200	1,288	.....	7.2
Rock.....	482.67	5,239	3,728	1,511	.....	10.8
Watsonwan.....	635.45	5,995	4,720	1,275	.....	9.4
Yellow Medicine..	763.12	7,863	6,213	1,650	.....	10.3
Total.....	9,435.81	92,772	71,751	17,686	3,335	9.8

## SOUTHEASTERN DIVISION, CENSUS OF 1885.

County.	Number of sq. miles.	POPULATION.				Number of persons to sq. mile.
		Total.	Township.	Village.	City.	
Blue Earth.....	776.88	24,462	16,170	447	7,845	31.49
Dakota.....	611.32	18,590	11,529	1,955	5,106	30.41
Dodge.....	438.05	10,487	8,414	2,073	.....	23.95
Faribault.....	723.72	15,163	10,814	4,349	.....	20.9
Fillmore.....	867.21	26,077	18,492	8,185	.....	30.7
Freeborn.....	722.68	17,964	13,718	281	3,965	24.
Goodhue.....	784.79	31,113	20,646	3,597	6,870	39.6
Houston.....	579.85	15,482	12,084	2,798	.....	26.7
Le Sueur.....	472.48	18,559	14,348	2,437	1,774	39.2
Mower.....	711.18	15,277	11,557	1,215	2,505	21.4
Olmsted.....	682.36	20,518	14,378	827	5,313	30.9
Rice.....	504.	24,941	14,351	1,213	9,377	40.9
Scott.....	353.60	14,181	11,108	1,240	1,833	39.8
Steele.....	430.59	12,733	9,087	386	3,280	29.5
Wabasha.....	591.63	17,909	10,597	2,392	5,010	30.2
Waseca.....	437.01	13,342	9,318	1,511	2,513	30.5
Winona.....	638.92	31,928	15,121	1,183	15,624	49.7
Total.....	10,314.86	328,816	222,332	36,069	70,415	31.8

## TOTALS OF DIVISIONS, CENSUS OF 1885.

Division.	Number of sq. miles.	POPULATION.				Number of persons to sq. mile.
		Total.	Township.	Village.	City.	
Northwest.....	15,269.49	100,299	79,172	10,244	10,883	6.5
Northeast.....	13,434.97	232,055	62,982	12,082	156,991	11.9
Central.....	13,167.40	363,051	197,126	28,329	137,596	27.5
Southwest.....	9,435.81	92,772	71,751	17,686	3,335	9.8
Southeast.....	10,314.87	328,816	222,332	36,069	70,415	31.8
Grand Total.....	71,622.54	1,116,993	633,363	104,410	379,220	15.6

The unorganized Counties of Beltrami, Cass, Cook and Itasca are not included in the above tables.

## SMALL-POX.

No deaths from this cause reported in 1887.

## MEASLES.

Total deaths from this cause in 1887.....	185
Per cent. of deaths from measles to total deaths from all all causes.....	1.39
Deaths from measles under 1 year of age.....	53
“ “ “ between 1 and 2 years old.....	42
“ “ “ “ 2 “ 3 “ .....	12
“ “ “ “ 3 “ 4 “ .....	7
“ “ “ “ 4 “ 5 “ .....	8
“ “ “ “ 1 “ 5 “ (exact year unspecified).....	14

Total deaths from measles under 5 years old.....	136
Per cent. of deaths from measles under 5 years to total deaths from same cause.....	73.51

Deaths from measles by months—

January....	4	April.....	32	July.....	15	October.....	4
February...	17	May.....	37	August....	8	November...	5
March.....	27	June.....	28	September .	3	December...	5



TABLE NO. XVII.

## MEASLES, 1887,

Showing the distribution in townships, villages and cities of each county by months.

County.	Months.												No. localities invaded.	No. deaths in—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Townships.	Villages.	Cities.
Aitkin.....				1									1		1	
Anoka.....				8			1						3	2		7
Becker.....					1								1	1		
Benton.....									1				1	1		
Blue Earth.....							1						1	1		
Brown.....								1					1		1	
Carlton.....		1			2			1		1			3	4		
Carver.....			1										1	1		
Chisago.....													1		1	
Crow Wing.....				2	1								1			3
Dodge.....			2				1						2	2	1	
Goodhue.....											3		2	1		2
Grant.....	1												1	1		
Hennepin.....				3	2		1	1		1			1			8
Kanabec.....							1	1					1	1		
Kandiyohi.....	1	1											1	1		
LeSueur.....	1	7	10	5			1						12	20	3	1
McLeod.....													1		1	
Marshall.....			1			1							1	1		
Nicollet.....				2									2	1		1
Otter Tail.....				1						1			2	1		1
Polk.....	1	1										1	4	3		1
Redwood.....				1									1	1		
Renville.....				1			1						1	2		
Rice.....			2										1	2		
Ramsey.....	1	8	7	13	10	13	7		1	1		1	1			62
St. Louis.....			1	6	7	4			1			2	3	1	3	16
Scott.....	1												2	2		
Stearns.....				1	1								2	1		1
Steele.....			1					1					3	3		
Todd.....				1		1	1						3	3		
Wabasha.....			1	1									2	1	1	
Washington.....							2	3			1	1	2	3		3
Winona.....					1	2			1	1			2	1		5
Total.....	4	17	27	32	37	28	15	8	3	4	5	5	65	62	13	110

No deaths from this cause were reported in the counties of Big Stone, Chippewa, Clay, Cottonwood, Dakota, Douglas, Fairbault, Fillmore, Freeborn, Houston, Hubbard, Isanti, Jackson, Kittson, Lac qui Parle, Lake, Lincoln, Lyons, Martin, Meeker, Morrison, Mower, Murray, Nobles, Norman, Olmsted, Pine, Pipestone, Pope, Rock, Sherburne, Sibley, Stevens, Swift, Traverse, Wadena, Waseca, Watonwaw, Wilkin, Wright, Yellow Medicine.

Total number counties invaded..... 34  
 " " " not invaded..... 42

TABLE NO. XVIII.

## MEASLES—POPULATION.

The following table summarizes the facts of previous tables as to this disease in the grand divisions of the State (see table No. XVI) in town, village and city population. All figures as to population are from the census of 1885.

	Northwest Division.	Northeast Division.	Central Division.	Southwest Division.	Southeast Division.
Population.....	100,290	232,055	363,051	92,772	328,816
No. of persons to square mile..	6.5	11.9	27.5	9.8	31.8
Counties invaded.....	4	10	9	2	9
Counties not invaded.....	6	6	10	12	8
Localities invaded.....	8	17	14	2	27
Township population.....	79,172	62,982	197,126	71,751	222,332
Village population.....	10,244	12,082	28,329	17,686	36,039
City population.....	10,833	156,991	137,596	3,335	70,415
Deaths in townships.....	6	12	9	1	33
Deaths in villages.....	..	5	2	1	5
Deaths in cities.....	2	91	10	..	8
Total deaths from this cause. ..	8	108	21	2	46

## SCARLATINA.

Total deaths from this cause in 1887 .....	196
Per cent of deaths from Scarlatina to total deaths from all causes.....	1.50
Deaths from Scarlatina under 1 year of age.....	14
“ “ “ between 1 and 2 years old.....	21
“ “ “ “ 2 “ 3 “ .....	28
“ “ “ “ 3 “ 4 “ .....	17
“ “ “ “ 4 “ 5 “ .....	14
“ “ “ “ 1 “ 5 “ (exact year unspecified).....	38

Total deaths from Scarlatina under 5 years old..... 132

Per cent of deaths from Scarlatina under 5 years old to  
total deaths from the same cause..... 67.34

Deaths from Scarlatina by months—

January....17	April.....21	July.....	9	October....10
February...26	May.....15	August.....13		November..16
March.....27	June.....17	September....	7	December..18

TABLE NO. XIX.

## SCARLATINA, 1887.

Showing the distribution in townships, villages and cities of each county by months.

COUNTY.	MONTH.												No. localities invaded.	Number of deaths in—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Townships.	Villages.	Cities.
Becker.....	1												1	1		
Big Stone.....		2											1	1		
Blue Earth.....			1	2									1	1		3
Brown.....						1							1	1		
Carlton.....							1						2	2		
Carver.....	1			1				3					4	5	2	
Dakota.....		1										1	2			2
Douglas.....				1									1	1		
Fillmore.....			2	1								2	2	5		
Goodhue.....											2		1			2
Hennepin.....	2		6	1	4	4	3	4	2	4			2	2		23
Isanti.....		1										4	3	2		
Kandiyohi.....			1	1									2	2		
Lac qui Parle.....	1	2											1	2		
LeSueur.....	1	2	2	1									6	5		1
Mower.....	1	1	2	1		2	1						4	7		
Murray.....										1			1	1		
Nicollet.....	1		1										2	2		
Norman.....						1	1					2	3	4		
Olmsted.....	1		1	1									3	3		
Otter Tail.....								2			1	3	2	2	4	
Polk.....	4	4	1	2	2								7	7	2	8
Ramsey.....	5	9	4	4	3	2	1	3			3	1	1	1		35
Renville.....									1		1		2	2		
St. Louis.....			3	1		1	1						1			6
Scott.....			1										1			1
Stearns.....							1						1			
Steele.....			1	1		1					1		3	1	2	1
Stevens.....							1						1	1		
Swift.....								1					4	2	3	
Waseca.....	3	1				1							2	7		
Washington.....	1	2	4									1	4	4		1
Watsonwan.....	1	1				2							1	1		
Wilkin.....						1						1	1	1		
Winona.....						1						1	1			2
Wright.....			2	1					1			2	4	2	2	
Yellow Medicine.....											2	3	2	5		
Total.....	17	26	27	21	15	17	9	13	7	10	16	13	82	86	20	90

No deaths from this cause were reported in the counties of Aitkin, Anoka, Benton, Chippewa, Chisago, Clay, Cottonwood, Crow Wing, Dodge, Faribault, Freeborn, Grant, Houston, Hubbard, Jackson, Kanabec, Kittson, Lake, Lincoln, Lyons, McLeod, Marshall, Martin, Meeker, Mille Lacs, Morrison, Nobles, Pine, Pipestone, Pope, Redwood, Rice, Rock, Sherburne, Sibley, Todd, Traverse, Wabasha, Wadena.

Total number of counties invaded..... 37  
 “ “ “ not invaded..... 39

TABLE NO. XX.

## SCARLATINA—POPULATION.

The following table summarizes the facts of previous table as to this disease in the grand divisions of the state (see table No. XVI) in town, village and city population. All estimates as to population are from the census of 1885:

	N. W. Division.	N. E. Division.	Central Division.	S. W. Division.	S. E. Division.
Population.....	100,299	232,055	363,051	97,772	328,816
Number of persons to square mile.....	6.2	11.2	27.5	9.8	31.8
Counties invaded.....	5	5	11	5	11
Counties not affected.....	5	11	8	9	6
Localities invaded.....	14	11	24	6	27
Township population.....	79,172	62,982	197,126	71,751	222,332
Village population.....	10,244	12,082	23,329	17,686	36,069
City population.....	10,833	156,991	137,596	3,335	70,415
Deaths in townships.....	15	15	22	10	24
Deaths in villages.....	6	.....	7	.....	7
Deaths in cities.....	8	42	28	.....	12
Total deaths from this cause.....	29	57	57	10	43

## CROUP.

Total deaths from this cause in 1887.....	283
Per cent. of deaths from croup to total deaths from all causes.....	2.13
Deaths from this cause under 1 year of age.....	82
“ “ “ between 1 and 2 years old.....	43
“ “ “ “ 2 and 3 “.....	37
“ “ “ “ 3 and 4 “.....	31
“ “ “ “ 4 and 5 “.....	19
“ “ “ exact year unspecified under 5 years old.....	23
Total deaths from croup under 5 years of age.....	235
Per cent. of deaths from croup under 5 years to total deaths from same cause.....	83.18

## DEATHS FROM CROUP BY MONTHS.

Jan., 18.	March, 13.	May, 7.	July, 16.	Sept., 27.	Nov., 43.
Feb., 21.	April, 23.	June 10.	Aug., 14.	Oct., 48.	Dec., 43.

TABLE NO. XXI.

## CROUP, 1887.

Showing the distribution in townships, villages, and cities of each county by months.

COUNTY.	MONTH.												No. localities invaded.	Number of deaths in—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Townships.	Villages.	Cities.
Anoka.....	1	2		2	2		1		1	1	2		3	12		
Becker.....		1											1	1		
Benton.....										1			1	1		
Big Stone.....	1			1									1		2	
Blue Earth.....		1		1									2	2		
Brown.....									1				1	1		
Carver.....							1						2	1	1	
Carlton.....									1		1		1	2		
Chippewa.....		1								1			2	2		
Clay.....										1			1	1		
Crow Wing.....											1		1			1
Dakota.....										1			1		1	
Dodge.....								2					2	1		1
Douglas.....	1							1		1		2	2		5	
Fillmore.....									1				1		1	
Goodhue.....	1	1				1				1			3	2		2
Grant.....									1				1	1		
Hennepin.....				2		2	4	5	10	7	9		2	1		55
Houston.....	1								1	1			2	2		
Isanti.....							1						1	1		
Jackson.....									1				1	1		
Kandiyohi.....		1											1	1		
Lac qui Parle.....	1	1	1	2									3	5		
LeSueur.....	1								2	3		2	4	6	2	
Polk.....			1			1							3	2		1
McLeod.....									2	1	3		2	1	5	
Martin.....												2	1	2		
Meeker.....			1										1	1		
Morrison.....	1								1		2		2	4		
Mower.....				1									1	1		
Nicollet.....							1						1	1		
Nobles.....				1						1			2	2		
Norman.....							1						1	1		
Olmsted.....			1							1	3		3	2		3
Otter Tail.....			1	1						1	1		3	4		
Pope.....									1				1	1		
Ramsey.....	3	3	4	5	2	2	1	5	3	7	8	5	2	2		45
Redwood.....									1		1		1	3		
Renville.....				1						2			2	3		
Rice.....	1					1							2	2		
St. Louis.....				4		1					2		3		5	2
Scott.....									1	1			2	2		
Sibley.....	1	1	1							2			3	2	1	
Stearns.....	1									2	2		5	5		
Steele.....									1	1			1	1		
Swift.....			1								2		3	3		
Todd.....							2				2		3	2	2	
Wabasha.....		1	1		1								3	1	1	1
Wadena.....							1						1			1
Washington.....	1	2	1			3	2	2	2	1			5	11		3
Winona.....	3	5		1		1	1	5	5	10	3		4	2	1	31
Wright.....				1	1						2		3	1	3	
Total.....	18	21	13	23	7	10	16	14	27	43	43	43	105	107	33	143

No deaths from this cause were reported in the counties of Aitkin, Chisago, Cottonwood, Faribault, Freeborn, Hubbard, Kanabec, Kittson, Lake, Lincoln, Lyons, Marshall, Mille Lac, Murray, Pine, Pipestone, Polk, Rock, Sherburne, Stevens, Traverse, Waseca, Watonwan, Wilkin, Yellow Medicine—24.



TABLE NO. XXII. CROUP. POPULATION.

The following table summarizes the facts of previous tables as to this disease in the grand divisions of the state (See Table No. XVI) in town, village and city population; all figures as to population are from the census of 1885.

	N. W. Division.	N. E. Division.	Central Division.	S.W. Division.	S. E. Division.
Population .....	100,299	232,055	363,051	92,772	328,816
No. of persons to sq. m.	6.5	11.9	27.5	9.8	31.8
Counties invaded.....	6	9	17	6	14
Counties not invaded.	4	7	2	8	3
Localities invaded....	10	19	35	10	31
Township population..	79,172	62,982	197,126	71,751	222,332
Village population ....	10,244	12,082	28,329	17,686	36,069
City population.....	10,833	156,991	137,596	3,335	70,415
Deaths in townships ..	9	35	25	14	24
Deaths in villages.....	2	5	19	.....	7
Deaths in cities.....	0	51	55	.....	37
Total deaths.....	11	91	99	14	68

## DIPHTHERIA.

Total deaths from this cause in 1887.....	788
Per cent. of deaths from Diphtheria to total deaths from all causes.....	5.9
Deaths from Diphtheria under 1 year of age.....	44
“ “ “ between 1 and 2 years old.....	52
“ “ “ “ 2 “ 3 “ .....	63
“ “ “ “ 3 “ 4 “ .....	76
“ “ “ “ 4 “ 5 “ .....	71
“ “ “ “ 1 “ 5 “ exact year unspecified.....	31
Total deaths from Diphtheria under 5 years old.	337
Per cent. of deaths from Diphtheria under 5 years to total deaths from same cause .....	42.89

Deaths from Diphtheria by months:--

Jan.....59	April.....30	July.....34	Oct. ....100
Feb..... 48	May.....35	Aug.....63	Nov.....110
March.... 28	June.....62	Sept.....83	Dec.....136

TABLE NO. XXIII.

## DIPHTHERIA, 1887,

Showing the distribution by townships, villages and cities of each county, by months:

COUNTY.	MONTH.												No. Localities Invaded.	NUMBER OF DEATHS IN—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Township.	Village.	City.
Aitkin.....												2	1		2	
Anoka.....			1		1					1	1	2	3	5		2
Becker.....									1	1	1	1	3	4		
Benton.....			1							2	2	1	1	2		
Big Stone.....	2											1	1	2	3	
Blue Earth.....	2	1	1	1		1	1	7				1	5	10		4
Brown.....	2	3	2	3	1	1	2	5	3			3	3	2		23
Carlton.....												1	1	1		
Carver.....	1					2		1	1	7	2	1	6	9	5	
Chippewa.....	1		1	1								1	2	3		
Chisago.....	2				4	3	2	1	1	4	1	1	4	10	8	
Clay.....		1								1	1	1	3	2	2	1
Crow Wing.....					1							1	1			1
Dakota.....	1	5				1	1				1	1	4	7	2	
Douglas.....		2											1	2		
Faribault.....			1				1						2	2		
Fillmore.....				2					1	2	4		3	9		
Freeborn.....					2		1		4				3	7		
Goodhue.....						2	1			2	7		4	10		2
Grant.....												1	1	1		
Hennepin.....			1	5	6	11	7	22	29	27	30	32	5	6	5	159
Honston.....	1		2			7	2	7	9	4	2		7	36		
Isanti.....										2			3	6		
Kanabec.....											2		1	2		
Kandiyohi.....	4						2					1	2	4	3	
Kittson.....		3											1	3		
Lac Qui Parle.....	1												1	1		
Le Sueur.....	1					1	2	3	4				8	11		
Lyon.....	1						1	1					1	1		
McLeod.....				2	1		1						2	2	1	
Martin.....													1	2		
Meeker.....		3		5	3	1	1	1	2		2		7	18		
Mille Lacs.....	1	2		1									1	4		
Mower.....	1					2				4			4	5		2
Nicollet.....		2			1	1	1		3		12		7	20		
Nobles.....										3	2		2	5		
Norman.....		2											1	2		
Olmsted.....	1	1		2	1			2	1	1	1		5	7		1
Otter Tail.....	3	3	2			1	1		1	5	2		16	18	2	
Polk.....	2	8	1	1	1	3	1	1	2	5	9		11	31	2	1
Ramsey.....	14	4	7	5	5	6	3	1	7	12	7	10	5	5	1	75
Redwood.....										2	1		1	1		
Renville.....		2			1	6	1			2	2		6	14		
Rice.....													1	1		
St. Louis.....			2										1	1		3
Scott.....	1								6	5	2		7	10	1	7
Sherburne.....		2				2							2	4		
Sibley.....	4	3					1	2					4	9	1	
Stearns.....				2					3	1	6		6	11	1	
Steele.....	3	2			1	1			1	1			3	1	5	2
Todd.....										3			1	3		
Traverse.....													1	1		
Wabasha.....	1				1	1				3	1		3	4		3
Waseca.....		4					1				1		2	6		
Washington.....	2		1	2	3	4			6	1			6	7		12
Watsonwan.....					1		5			1	4		4	11	1	
Wilkin.....					1	2							3	5		
Winona.....		2		1	9				8	3	7		7	24		6
Wright.....	8		4	2	1	6	1	2	1		2	9	10	32	4	
Yellow Medicine.....						2	1		1				2	4		
	51	48	28	30	33	62	34	93	83	100	110	136	208	432	51	303

No deaths from this cause were reported in the counties of Cottonwood, Dodge, Hubbard, Jackson, Lake, Lincoln, Marshall, Morrison, Murray, Pine, Pipestone, Pope, Rock, Stevens, Swift, Wadena.

Total number of counties invaded.....60

Total number of counties not affected.....19

TABLE NO. XXIV.

## DIPHTHERIA—POPULATION.

The following table summarizes the facts of previous tables as to this disease in the grand divisions of the State (see table No. XVI) by town, village and city population. All estimates as to population are from the census of 1885.

	Northwest Division.	Northeast Division.	Central Division.	Southwest Division.	Southeast Division.
Population.....	100,299	232,055	363,051	92,772	328,816
No. of persons to square mile.	6.5	11.9	27.5	9.8	31.8
Counties invaded.....	7	13	16	8	16
Counties not affectede.....	3	3	3	6	1
Localities invaded.....	32	30	63	15	68
Township population.....	79,172	62,982	197,126	71,751	222,332
Village population.....	10,244	12,082	28,329	17,686	36,069
City population.....	10,833	156,991	137,596	3,335	70,415
Deaths in township.....	65	47	136	34	150
Deaths in villages.....	6	11	23	1	10
Deaths in cities.....	1	93	159	23	27
Total deaths from this cause ..	72	151	318	58	187

## TYPHOID FEVER.

Total number of deaths from this cause in 1887.....	717
Per cent. of deaths from Typhoid Fever to total deaths from all causes.....	5.4
Deaths from Typhoid Fever under 1 year of age.....	5
“ “ “ “ between 1 and 2 years old	11
“ “ “ “ 2 “ 3 “	7
“ “ “ “ 3 “ 4 “	6
“ “ “ “ 4 “ 5 “	4
“ “ “ “ 1 “ 5 years old	
exact year unspecified.....	11
Deaths from Typhoid fever between 5 and 10 years old	42
“ “ “ “ 10 “ 15 “	67
“ “ “ “ 15 “ 20 “	119
“ “ “ “ 20 “ 30 “	274
“ “ “ “ 30 “ 40 “	88
Total deaths from Typhoid Fever between 15 and 30 years old.....	393
Per cent. of deaths from Typhoid Fever between 15 and 30 years of age to total deaths from same cause	54.81
Deaths from Typhoid Fever by months—	
January.....37 April.....18 July..... 35 October....158	
February....16 May.....21 August....103 November.. 75	
March.....19 June.....32 September.151 December.. 53	

## TABLE NO. XXV.

## TYPHOID FEVER, 1887.

Showing distribution by townships, villages and cities of each county, by months:

COUNTY.	MONTHS.												No. Localities Invaded.	NUMBER OF DEATHS IN—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Township.	Villages.	Cities.
Anoka.....						2			1	1	1	1	1			6
Becker.....									1	1			1	1	2	
Benton.....									1				1			
Big Stone.....	1													1		
Blue Earth.....	1							2	4	2	1		5	8		
Brown.....	1												1			1
Carleton.....						1	3	1	2	2			3	9		
Carver.....	3		1	2	1		5		1	1	2	10	8	8		
Chippewa.....			1						1	2	1	4	5			
Chisago.....				2						2	1	4	4	1		
Clay.....			1			1				1	1	3	2	2		
Cottonwood.....									3	2			3	5		
Crow Wing.....	3				1				2	2		1	6	4	1	4
Dakota.....	1							1		3			4	3	2	1
Dodge.....			1			2							4	3		
Douglas.....								1			2	3	2	2		
Faribault.....								1					4	5		
Fillmore.....		1	1		1			2		1			4	3		
Freeborn.....				1					3	2		7	9			1
Goodhue.....			1						1				2	2		
Grant.....													2			
Hennepin.....	2	1	4	7	12	10	30	54	33	12	3	4	3	3	162	
Houston.....	2	1	1	1		1	2	2				1	3	4		
Isanti.....		1									1	1	3	3		
Jackson.....						1			2	2		2	3	4		
Kandiyohi.....	1	1	1						2	2		1	5	5		
Lac Qui Parle.....				1	1					2	1	5	5			
Le Sueur.....	3	1				2	1	2	1	3	1	8	11	3		
Lyons.....			1									1	1	1		
McLeod.....								1	1				4	4		
Marshall.....	1							1			1		1	1		
Martin.....								1					1	1		
Meeker.....	1	1	2			1			2	1		5	5			
Morrison.....									2		1	3	2	1		
Mower.....					1	1		1	1			4	1	1	3	1
Murray.....			1										1	1		
Nicollet.....			1					1	2	1	1		3	3		1
Nobles.....								2	1	1			4	4	1	
Norman.....	1					1			1	1			9	4		
Otter Tail.....	1			3	2			1	2		1	3	12			1
Pine.....					1			1					2	1		
Pipestone.....								2	2				5	4		4
Polk.....		1	1		1	1		1	5				1	2		
Pope.....													1			
Ramsey.....	5	3	4	3	2	4	10	22	33	31	19	11				147
Redwood.....		1						1	2	1			1	3	2	
Renville.....			1									1	3	3		
Rice.....					1			2	2	4		2	3	6		5
Rock.....													1	1		
St. Louis.....					1	1		6	9	27	15	10	4	7	1	61
Scott.....	1					1		1				1	3	4		
Sibley.....	2	1				1		1					3	4	1	
Stearns.....					1	1	1	1	3	4	1		5	4	6	1
Steele.....	2	1							1				3	3		1
Stevens.....	2												2	1		
Swift.....				1		1	1		3		1	5	1	7		
Todd.....									2				1	2		
Traverse.....										4	1		2	5		
Wabasha.....									2		1	3	1	1		1
Wadena.....								1					1	1		
Waseca.....				1							1	2	2			1
Washington.....		1						1	2	6	3		3	6		7
Watsonwan.....	1	2						1	1	1			4	4	1	
Wilkin.....									1				1	1		
Winona.....	2							1	1	3		1	8	6	1	1
Wright.....	1	1	1		1				2	1	1	1	6	6	2	
Yellow Medicine.....								2				2	2	1	3	
Total.....	37	15	19	18	21	32	35	103	151	158	75	53	223	244	63	410

No deaths from this cause were reported in the counties of Aitkin, Hubbard, Kanabec, Kitt-on, Lake, Lincoln, Mille Lacs, Olmsted, Sherburne.

Total number of counties invaded..... 67

Total number of counties not invaded..... 9

TABLE NO. XXVI.

## TYPHOID FEVER—POPULATION.

The following table summarizes the facts of previous tables as to this disease in the grand divisions of the state (see table No. XVI) by town village and city population. All estimates as to population are from the census of 1885.

	N. W. Division.	N. E. Division.	Central Division.	S. W. Division.	S. E. Division.
Population .....	100,299	232,055	363,051	92,772	328,816
Number of persons to the square mile..	6.5	11.9	27.5	9.8	31.8
Counties invaded.....	8	11	19	13	16
Counties not affectedd .....	2	5	.....	1	1
Localities invaded .....	29	26	64	29	76
Township population.....	79,172	62,982	197,126	71,751	222,332
Village population.....	10,244	12,082	28,329	17,686	36,069
City population.....	10,833	156,991	137,596	3,335	70,415
Deaths in townships .....	28	35	74	29	78
Deaths in villages.....	9	3	28	7	16
Deaths in cities .....	5	225	164	1	15
Total deaths from this cause.....	42	263	266	37	109

## DIARRHOEAL DISEASES OF INFANCY.

Total deaths from this cause in 1887.....	1,189
Per cent. of deaths from Diarrhoeal Diseases of Infancy to total deaths from all causes.....	11.15
Deaths from this cause under 1 year of age.....	958
“ “ “ between 1 and 2 years old.....	132
“ “ “ “ 2 “ 3 “ .....	34
“ “ “ “ 3 “ 4 “ .....	22
“ “ “ “ 4 “ 5 “ .....	8
“ “ “ “ 1 “ 5 “ (exact age unspecified).....	29

Deaths from Diarrhoeal Diseases of Infancy by months—

January.....	3	April.....	29	July.....	406	October....	39
February....	9	May.....	26	August....	330	November..	10
March.....	12	June.....	175	September..	134	December..	16



TABLE NO. XXVII.

DIARRHOEAL DISEASES OF INFANCY, 1887.

Showing the distribution in townships, villages, and cities of each county by months.

COUNTY.	MONTH.												No. localities invaded.	Number of deaths in—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Township.	Village.	Cities.
Aitkin.....							1						1		1	
Anoka.....					1	1							5	5		
Becker.....		1						2	1	1			5	2	4	
Benton.....							1	2					1	3		
Big Stone.....							2	2					3	3	1	
Blue Earth.....						1	4	8	4	1			9	8	1	9
Brown.....							2	4	1				4	3	2	2
Carlton.....									1				4	3		
Carver.....					1		5	2	1				5	4	5	
Chippewa.....							5	1					8	3	3	
Chisago.....							9	2				1	6	6	5	
Clay.....								1	1				2	2		
Cottonwood.....			1										1	1		
Crow Wing.....							5	1					2	1		5
Dakota.....						3	13	7	3				11	10	10	6
Dodge.....								4	3				4	6	2	
Douglas.....					2		1	1	1	1			5	4	2	
Fillmore.....		1		1	1	1	3	2	1			1	9	8	2	
Freeborn.....							3	4					6	5		2
Goodhue.....			1			1	4	7	4	1			8	10	4	11
Hennepin.....				10	5	67	114	46	17	6	4	2	9	14	1	256
Houston.....				1				1	2	1			5	4	2	
Isanti.....							2	5					5	5		
Jackson.....								3	1	1			4	5	1	
Kandiyohi.....				1			1	4	2		1		7	8	1	
Kittson.....								2					2	2		
Lac qui Parle.....								2					1		2	
LeSueur.....							3	5	3		1		9	7	3	2
Lincoln.....				1									1	1		
Lyon.....							3	4	1	2			6	7	3	
McLeod.....	1						1	1	1				3	2		
Marshall.....								2	2	1			4	5		
Martin.....							1						1	1		
Meeker.....								5					5	4	1	
Mille Lac.....		1			1								1	2		
Morrison.....							1	4	1	3			6	2		
Mower.....							3	2	1	1			5	2		3
Murray.....				1		1		2		2			5	3	3	
Nicollet.....							5	1	1	1			6	5		3
Nobles.....		1		1			5	3		1			6	9	2	
Norman.....							1	4	3				5	7		
Olmsted.....	1					1	2			1			7	7		
Otter Tail.....	1	2			3		3	11	5	3	1	3	19	32	2	4
Pine.....							2	3					3	1	4	
Pipestone.....						1		1	2				3	3		
Polk.....			1				1	4	7				9	12	1	1
Ramsey.....			4	5	8	84	103	59	19	6	3	2	3	1	3	289
Redwood.....							1	1	3	1			5	5	1	
Renville.....		1					2	7	3	4			10	13	4	
Rice.....							2	3	2				3	3		4
Rock.....							1						1	1		
St. Louis.....				4	1	3	28	21	9	1			2	4		63
Scott.....			1				3	3	3				5	8		2
Sherburne.....			1				1	1					2	3		
Sibley.....							1	2	1				3	2	1	
Stearns.....				1	1	1	4	5	4	1			13	13	1	3
Stevens.....						1	1	4				1	4	4	3	
Swift.....							1	5	1	1			5	8		
Todd.....			1					2	2				5	5	1	
Traverse.....							2	2					3	4		
Wabasha.....						1	2	3	2				7	5		3
Wadena.....					1			1					2	1	1	
Waseca.....		1		1				3					2	1		4
Washington.....		1		1			8	6	1		1		6	6	3	9
Watsonwan.....								1					1		1	
Wilkin.....								1	2				3	3		
Winona.....			1			5	23	20	4			1	6	4	1	47
Wright.....			1				4	9	3			1	10	13	5	
Yellow Medicine.....			1	1				7					5	5	4	
Total.....	3	9	12	29	26	175	406	330	134	39	10	16	333	355	98	736

No deaths from this cause were reported in the counties of Hubbard, Faribault, Grant, Kanabec, Lake, Pope, Steele.

Number of counties invaded.....60 | Number of counties not invaded..... 7

TABLE NO. XXVIII.

## DIARRHŒAL DISEASES OF INFANCY—POPULATION

The following table summarizes the facts of previous tables as to this disease in the grand divisions of the State (see table No. XVI) in town, village and city population. All figures as to population are from the census of 1885.

	Northwest Division.	Northeast Division.	Central Division.	Southwest Division.	Southeast Division.
Population.....	100,299	232,055	363,051	92,772	327,716
No. of persons to square mile..	6.5	11.9	27.5	9.8	31.8
Counties invaded.....	9	14	17	14	15
Counties not invaded.....	1	2	2	..	2
Localities invaded.....	51	44	106	44	94
Township population.....	79,172	62,982	197,126	71,751	222,332
Village population.....	10,244	12,082	23,329	17,686	36,069
City population.....	10,833	156,991	137,559	33,335	70,415
Deaths in townships.....	67	50	109	44	88
Deaths in villages.....	8	16	31	18	25
Deaths in cities.....	5	374	262	2	193
Total deaths from this cause..	80	440	402	64	206

## PHTHISIS.

Total deaths from this cause in 1887.....	1,125
Per cent. of deaths from Phthisis to total deaths from all causes.....	8.48

Deaths from Phthisis between 10 and 15 years old.....	34
“ “ “ “ 15 “ 20 “ .....	147
“ “ “ “ 20 “ 30 “ .....	374
“ “ “ “ 30 “ 40 “ .....	242

Total deaths from Phthisis between 20 and 40 years old	616
Per cent. of deaths from Phthisis between 20 and 40 years, to total deaths from same cause.....	54.75

## Deaths from Phthisis by months—

January ... 56	April.....117	July.....101	October....103
February.. 60	May.....139	August....106	November.. 86
March..... 99	June..... 83	September. 69	December.. 106

TABLE NO. XXIX.

PHTHISIS—1887.

Showing the distribution in townships, villages and cities of each county by months.

COUNTY.	MONTH.												No of localities invaded.	Number of deaths in—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Towns'p.	Villages.	Cities.
Aitkin.....					1								1		1	
Anoka.....	1		1	5		3	1		1	2	1	3	6	15		7
Becker.....		1		2	2	1	1	1		1	2		8	9	2	
Penton.....											1		2	3		
Bigstone.....					1						1		2	2		
Blue Earth.....			2	4		3		2	1	2	1	1	2	8	1	7
Brown.....	1		5	1		2		1	1	1	4	1	6	5	6	6
Carlton.....							1	1			2		2	4		
Carver.....		2		4		2		1	1			1	6	11		
Chippewa.....	1	1					1						3	2	1	
Chicago.....		2	1	1			1	2	1	1	3		5	12		
Clay.....									1				3	4		
Cottonwood.....		2						1	1	1	1	1	5	7		
Crow Wing.....						1				1			1			2
Dakota.....	3	1		3	1	1	1	2	2			1	11	10	3	2
Dodge.....					2	1		2			1		1	7	6	
Douglas.....							1			1		2	4	4		
Faribault.....		1	1	1		1		2		1			6	7		
Fillmore.....	2	3	7	5	2	1		2	4	1	4	3	19	31	3	
Freeborn.....	1	1	3	1	2		2	1	1		1	1	10	12		1
Goodhue.....	4		2	8	6	1	1	2	3	3		5	14	24	3	8
Grant.....								1		1			2	2		
Hennepin.....	2	2		10	31	17	22	23	2	17	21	24	13	21	2	148
Honston.....	2			2	1	2	3	1	1	2	2	2	10	15	3	
Isanti.....		1		3	1		1						5	6		
Jackson.....	1			1									2	2		
Kanabec.....	1							1					1	2		
Kandiyohi.....			2	2	1		1	2	1	2	1	2	8	10	4	
Kittson.....						1							1	1		
Lac qui Parle.....		2	2	2					3				6	8	1	
Le Sueur.....	1			2	6	1	1	2	1		1		12	7	6	4
Lincoln.....			1				1			1			2	1	1	
Lyon.....			2					1		1		1	4	4	1	
McLeod.....		1	1		1		2			2			4	6	2	
Marshall.....	2	2									1	1	5	5	1	
Martin.....			1	1			1	2					2	2	3	
Meeker.....	2		1	1	2		1					1	5	8		
Mille Lacs.....						1			1				2	2		
Morrison.....	2				1				2		1		5	6	1	
Mower.....		1		2		1	3	1		1		1	8	7	1	2
Murray.....	2		2							1			4	5		
Nicollet.....		2	1		2		1	1	2	6	1	2	4	8		10
Nobles.....	1	1		1				1	1	1			6	4	2	
Norman.....			3	2	2					1			7	8		
Olmsted.....		1	4	3	6	1	2	3	3	1			9	12	1	15
Otter Tail.....	2	2	1	1	8	3		2	1	3	4	5	16	21	2	6
Pine.....		1											1	1		
Pipestone.....	1		1	1									3	3		
Polk.....	3	5		4	5			1	1			1	13	16	1	3
Pope.....			3		6		1			1	1		8	11		
Ramsey.....	10	13	18	10	18	13	21	19	19	15	10	13	3	6	1	172
Redwood.....			1	1						1			1	5	4	
Renville.....			1			1	2	1		1			1	6	5	1
Rice.....	1	2	4	2	6		2	2	1	1	1	2	2	5		16
Rock.....				2						3			2	5		
St. Louis.....	1			1		4	1			2	2	3	1			13
Scott.....	1	1	1	1	2					3	2	1	4	12		
Sherburne.....	1				1					2		1	8	5		
Sibley.....				1	1	1	3			1	2	2	8	11		
Stearns.....	1	2	3		1	4	4	1	2	4	1		14	19	1	3
Steele.....	1		1	1	4		1	1	1				6	8		2
Stevens.....				1	1	1	1	1		1		2	6	5	1	
Swift.....				1	1	1		2	1	2			10	10		
Todd.....	1		2	2				2	1			1	9	11	1	
Traverse.....	1							1					2	2		
Wabasha.....	1	1		2	1	1	2		1	2		1	6	4		8
Wadena.....			1	1		1				2			3	4		
Waseca.....		2		1		1		3		2	1	1	8	11		1
Washington.....		1	5	2	3	3	1	5	2		1	1	6	4	1	19
Watsonwan.....		1									2		2		3	
Wilkin.....						1		1		1			2	4		
Winona.....	3	1	7	2	3	3	3	2	2	4	5	7	11	14		28
Wright.....		1	3	2	2	1	1	2	3	1	2		12	16	2	
Yellow Medicine.....			1	2	1			1					5	5	1	
Total.....	56	60	99	117	139	83	101	106	69	103	86	106	450	563	69	493

No deaths from this cause reported in the counties of Hubbard and Lake.

Number of counties invaded, 74; number of counties not invaded, 2.

TABLE NO. XXX.

## PHTHISIS—POPULATION.

The following table summarizes the facts of previous tables as to this disease in the grand divisions of the State (see table No. XVI) in town, village and city population. All figures as to population are from the census of 1885.

	Northwest Division.	Northeast Division.	Central Division.	Southwest Division.	Southeast Division.
Population.....	100,299	232,055	363,051	92,772	328,816
No. of persons to square mile..	6.5	11.9	27.5	9.8	31.8
Counties invaded.....	9	15	19	14	17
Counties not invaded.....	1	1			
Localities not invaded.....	59	45	129	54	163
Township population.....	79,172	62,982	197,126	71,751	222,532
Village population.....	10,244	12,082	28,329	17,686	36,069
City population.....	10,833	156,991	137,596	3,335	70,415
Deaths in townships.....	75	63	174	55	196
Deaths in villages.....	6	4	15	19	25
Deaths in cities.....	9	213	161	6	104
Total deaths from this cause...	90	280	350	80	325

## BRONCHITIS.

Total deaths from this cause in 1887.....348.

Per cent. of deaths from Bronchitis to total deaths from  
all causes..... 2.62

Deaths from Bronchitis under 1 year old.....177.

“ “ “ between 1 and 2 years old..... 31.

“ “ “ “ 2 and 3 “ “ ..... 11.

“ “ “ “ 3 and 4 “ “ ..... 10.

“ “ “ “ 4 and 5 “ “ ..... 4.

“ “ “ (exact year unspecified) between

1 and 5 years old..... 27.

Total deaths from Bronchitis under 5 years .....260.

Per cent. of deaths from Bronchitis under 5 years to total  
deaths from same cause..... 74.71

Deaths from Bronchitis by months—

January, 37.....April, 51.....July, 22.....October, 23

February 31.....May, 25.....Aug., 22.....Nov., 24

March, 40.....June, 27.....Sept., 22.....Dec., 24

Taking the statistics when they were left at the last report, Nov. 1, 1886, the following is the general summary to Oct. 1, 1888:

## TABLE NO. XXXI.

## BRONCHITIS, 1887.

Showing the distribution in townships, villages and cities of each county by months.

COUNTY.	MONTH.												No. localities invaded.	Number of deaths in—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Townships.	Villages.	Cities.
Anoka.....						2	1						2	1		2
Becker.....									1				2	1	1	
Benton.....			1	1									2			
Bigstone.....	2												1			
Blue Earth.....	1		1					1					3			1
Brown.....	1	2													3	
Carver.....		1			1	1			2	1			5	4	2	
Chisago.....								1			1	1		3		
Clay.....	1					1	1					1	4	3	1	
Cottonwood.....							2						2			
Dakota.....										1	1					
Dodge.....	1		1		1								3	4		
Douglas.....	1		1									1				
Fairbault.....			1				1			1			2	2	1	
Fillmore.....		2	3	3	1			1			1		8	3	3	
Freeborn.....		1	2										3	3		
Goodhue.....	2	2	2	2				2					10	2	1	1
Grant.....	2					1							3	2		
Hennepin.....				9	4	6	3	2	6	5	4	6	1			45
Houston.....		2										2	1	5	3	
Isanti.....	2			1									2	2	3	
Jackson.....												1		2		
Kandiyohi.....	1	1			2	1		1					6	5	1	
Kittson.....		1											1	1		
Lac qui Parle.....	1				1	1							3	3		
Lake.....										1				1		
Le Seueur.....	1	2	1	1									4	4	2	
Lyon.....								1	1				1	1		
McLeod.....	1												1	1		
Marshall.....													1	1		
Martin.....	1		1	1						1			3	4		
Meeker.....		2	1				1		1		1		6	5	1	
Mower.....		1										1	2	2		
Morrison.....	1			1									2	2		
Murray.....			2	2				1					1	1		
Nicollet.....			2										4	6		
Nobles.....	1	1	2	1				1	1				6	4	3	
Norman.....			1	3			1			1			3	6		
Olmsted.....		2							1	1	1		5	4		1
Otter Tail.....		1	3	5	1	2		1				1	8	12		2
Pine.....													1	1		
Pipestone.....			1										1	1		
Polk.....	2	2		2		1	2		1	1	2		8	7		6
Pope.....													2	2		
Ramsey.....	4	5	7	10	8	4	3	6	3	7	5	6	2		1	72
Renville.....			1										3	3		
Rice.....	1		2		1	1							3			2
St. Louis.....			1	4	1	1	2	1	1			1	2	2		10
Scott.....			1													1
Stearns.....											1		1		1	
Todd.....				1									1	1		
Traverse.....								1					1	1		
Wabasha.....				1	1								2			2
Wadena.....			1							1			2	2		
Waseca.....											1	1	3	3		3
Washington.....						1		1	1			2	1		1	
Watsonwan.....	1															
Wilkin.....						1								1		
Winona.....	1	2		1			1	2	1	1	1	1	4	4		7
Wright.....	1		2	1				2	1	1	1		5	7	1	
Yellow Medicine.....						1	2			1			4	3	2	
Total.....	37	31	40	51	25	27	22	22	22	23	24	24	180	164	29	155

No deaths from this cause reported in the counties of Aitkin, Chippewa, Crow Wing, Hubbard, Kanabec, Lincoln, Mille Lacs, Morrison, Redwood, Rock, Sherburne, Sibley, Steele, Stevens and Swift.

Number of counties invaded, 61; number of counties not invaded, 15.



TABLE NO. XXXII.

## BRONCHITIS—POPULATION.

The following table summarizes the facts of previous tables as to this disease in the grand divisions of the State (see table No. XVI) in town, village and city population. All figures as to population are from the census of 1885.

	Northwest Division.	Northeast Division.	Central. Division.	Southwest Division.	Southeast. Division.
Population.....	100,299	232,055	353,051	92,772	328,816
No. of reasons to square mile..	6.5	11.9	27.5	9.8	31.8
Counties invaded.....	9	10	15	11	16
Counties not invaded.....	1	6	4	3	1
Localities invaded.....	30	18	43	26	61
Township population.....	79,172	62,982	197,126	71,751	222,332
Village population.....	10,244	12,082	28,329	17,686	36,069
City population.....	10,833	156,991	137,596	3,335	70,415
Deaths in townships.....	33	18	41	21	51
Deaths in villages.....	3	1	7	9	9
Deaths in cities.....	8	87	45	..	15
Total deaths from this cause...	44	106	93	30	75

## PNEUMONIA.

Total deaths from this cause in 1887..... 619

Per cent. of deaths from Pneumonia to total deaths from  
all causes..... 4.66

Deaths from Pneumonia under 1 year old..... 143

“ “ “ between 1 and 2 years old..... 64

“ “ “ “ 2 “ 3 “ ..... 40

“ “ “ “ 3 “ 4 “ ..... 22

“ “ “ “ 4 “ 5 “ ..... 8

“ “ “ “ 1 “ 5 “ (exact

year unspecified.)..... 2

Total deaths from Pneumonia under 5 years old..... 282

Percent of deaths from Pneumonia under 5 years to  
total deaths from this cause..... 45.55

Deaths from Pneumonia by months—

January.... 56 April..... 94 July..... 28 October.... 48

February.... 57 May..... 37 August... 17 November.. 59

March..... 63 June..... 30 September. 38 December.. 77

TABLE NO. XXXIII.  
PNEUMONIA—1887.

Showing the distribution in townships, villages and cities of each county by months.

COUNTY.	MONTH.												No. of localities invaded.	Number of deaths in—		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Towns <sup>p</sup>	Villages.	Cities.
Aitkin.....	1												1		1	
Anoka.....		1	1	2		2				1	1		1	6		3
Becker.....		1	1	2									2	1	1	
Bigstone.....				2									2			
Blue Earth.....	1		2	1		1	1						9	9		1
Brown.....	1	1											4	3	1	
Carlton.....											1		1	1		
Carver.....		2	1	1						1	2	1	6	6	2	
Chippewa.....	1	2			1					1	1		3	5		
Chisago.....	1		2	1					1	1	1		5	5	3	
Clay.....	1				1								1	1		
Crow Wing.....											1		1			1
Dakota.....		1					1	1	1	2			3	1	2	3
Dodge.....		1			1		1	2	2			2	2			
Douglas.....		2	2	1						1	1		4	4	2	
Fairbault.....		1	2							1	1	1	5	6		
Fillmore.....		1	7	1			1	1	1				5	7	5	
Freeborn.....			1	2						1	1		2	4		
Goodhue.....	2	5		1		1			2	2	2		8	11	1	3
Grant.....					1						1		3	3		
Hennepin.....		1	17	9	10		7	3	7	9	13	14	5	7		83
Houston.....	1	1	1	1									6	7		
Isanti.....	1		1		1				1	1	1		4	6		
Jackson.....							1			1	1		3	2	1	
Kandiyohi.....			4		1			1					5	5	1	
Lac qui Parle.....				1	1				1		2	1	6	5	1	
LeSueur.....		2					1						3	2		1
Lyon.....			1	1		1				1			4	4	1	
McLeod.....			1									1	2	2		
Marshall.....							2						2	2		
Martin.....			2	1				1					4	3	1	
Meeker.....	1									1	1		3	3		
Mille Lac.....									2				1	2		
Morrison.....		1											1	1		
Mower.....					1				1	1	1		5	3	2	
Nicollet.....			1		1	1			1	1	1		4	5		
Nobles.....					1	1			1	1	1		3	2	1	
Norman.....	1	2	1										2	2		
Olmsted.....	2	2		1	3							1	8		1	
Otter Tail.....	4	6	1			1		1	2		1	2	9	11		7
Polk.....	1		2	4	2	1		1		1		2	7	5	6	3
Pope.....		1		2									5	5		
Ramsey.....	13	12	11	31	16	5	6	5	6	10	13	12	5	5	1	134
Redwood.....		3		1									5	6		
Renville.....			1	3	1					1			5	4	2	
Rice.....	3	1	1	2			3			1			7	4	2	6
Rock.....			1		1				1	1	1		4	3	1	
St. Louis.....				2	3				1	4	3	7	4	1	7	12
Scott.....											1		1	1		
Sherburne.....				1		1							2	2		
Sibley.....	2		1	1	1	1		2	1	2	1		10	12		
Stearnes.....			3		2	1		1	1	1	1		8	7	2	2
Steele.....	3	1	2	1		1							5	8		
Stevens.....	1												1	1		
Swift.....	1				1								2	2		
Todd.....	3	1								1			4	6		
Traverse.....					1					1	1		3	2	1	
Wabasha.....	2	2	1	3			1			1			7	3	2	4
Waseca.....	1		1										1	4		
Washington.....	2	2	3			3			5		1	3	6	11		7
Watsonwan.....		1		1				1					3	2	1	
Wilkin.....									1	1			1	1		
Winona.....	3	1	2	5	1	1		1	2	1	2		4			15
Wright.....	4	2	3		1				1	1	2		10	14		
Total.....	56	57	68	94	47	30	28	17	58	48	59	75	271	277	57	285

No deaths from this cause were reported in the counties of Benton, Cottonwood, Hubbard, Kenabec, Kittson, Lake, Lincoln, Murray, Pine, Pipestone, Wadena, Yellow Medicine. Number of counties invaded, 64; number of counties not invaded, 12.

TABLE NO. XXXIV.

## PNEUMONIA—POPULATION.

The following table summarizes the facts of previous tables as to this disease in the grand divisions of the State (see table No. XVI) in town, village and city population. All figures as to population are from the census of 1885.

	Northwest Division.	Northeast Division.	Central Division.	Southwest Division.	Southeast Division.
Population.....	100,290	232,055	363,051	92,772	328,816
No. of persons to square mile..	6.5	11.9	27.5	9.8	31.8
Counties invaded.....	7	12	19	9	17
Counties not affectedd.....	3	4	..	5	..
Local ties invaded.....	24	36	85	36	90
Township population.....	79,172	62,982	197,126	71,751	252,332
Village population.....	10,244	12,082	28,329	17,686	36,069
City population.....	10,833	156,991	137,596	3,335	70,115
Deaths in townships.....	22	42	95	30	88
Deaths in villages.....	8	12	10	8	19
Deaths in cities.....	10	160	85	..	30
Total deaths from this cause...	40	214	190	38	137

## TABLE NO. XXXV.

## VIOLENT DEATHS.

*Deaths by violence in Minnesota, at different periods of life, in the year 1887.*

The number of deaths due to violence in 1887 (679). 5.22 per cent. of deaths from all causes for that year, is about the average of the preceding four years. For the first time we have been able to discover the causes of this mortality, and the following table is the result of this investigation. As will be seen by reference to the table 109 deaths are attributed to *vehicles and horses*, of which 86 were due to *railroads*, *weather agencies* caused 42 deaths, 26 from *lightning*, 10 *freezing*, 2 *storms*, 4 *exposures*; *asphyxia* is charged with 105 deaths, of which 76 were from drowning; *poisoning* 16, with which drugs are charged with 9. For full details see the table.

(Light face type, Males : dark face, Females.)

CAUSE.	AGES AT DEATH.																	
	Total all ages.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	
TOTAL .....	677	67	9	10	8	7	13	41	35	43	140	86	75	55	27	25	6	22
Males.....		41	5	6	5	5	8	31	25	37	131	80	66	44	24	20	6	22
Females.....		26	4	4	3	2	5	10	6	6	9	8	9	11	3	5	0	7
I. IN MINES.....																		
(a) Iron Mines.....	2										1	1						
(b) Stone Quarries.....	1										1							
II. VEHICLES AND HORSES.....																		
(a) Railroads.....	87	1						3	2	8	23	13	16	6	4	2		7
(b) Other Vehicles.....	6							1	1	2			1	1	1			
(c) Horses.....	16			1			1	3	2		4	1	2	1		1		
III. MACHINE Y.....	9						1		1	2	2	1	1			1		
IV. WEAPONS AND IMPLEMENTS.....	32						2	2	3	6	8	3	3			2		
V. FALLS AND BLOW S.....	32	1					1	1	1		3	1	5	3	2	2	2	1
	2						1				1		1	1	1	1		2
VI. SCALDS, BURNS, EXPLOSIONS.....	32	4		2	1	1		1			1		1	1	1	1		1
	2	2	1	1	1	1		6	1	1			1		1	1		1
VII. WEATH R AGENCIES.....	42							1	2	2	8	4	2	2	2	3	1	
	1	1						1	2	1	1	1	3	3	1			
VIII. ASPHYXIA .....	105	6	3	2	1	3	2	9	12	5	22	11	3	4	1			6
	7	1	1					1	1	1	2	1		1				
IX. POISON.....	16							1	1	1				2				
			1			4				1	1		2	1				
X. OTHER & ILLDEFINED CAUSES.....	234	20	2	4	1	1		10	4	5	50	23	15	11	11	4	1	6
	10		1	1	1					1	1	2	2	3	1	2		2
SUICIDE .....	53							1		1	7	11	11	9	2	2		2
											3			2	1			1
MURDERED.....	12	1									3	1		1				2
	1							1			1							1

## VIOLENT DEATHS, 1887—DETAILED REPORT.

CAUSES.	AGES AT DEATH.																	
	Total ages.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	1 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.
IN MINES .....	3																	
(a) Iron Mines .....	2										1	1						
(b) Stone Quarries .....	1										1							
VEHICLES AND HORSES...	109																	
(a) Railroads .....	86	1						3	3	9	23	13	16	6	4	2		7
Snow Plow .....	1												1					
(b) Horses .....																		
Runaway .....	6				1					1			1	1	1	1		
Killed by Horse .....	16				1		1	3	2		4	1	2	1		1		
MACHINERY .....	9																	
Circular Saw .....	2									1	1							
Saw-mill .....	1												1					
Fly-wheel .....	1												1					
Reaper .....	2						1									1		
Cane Mill .....	1									1								
Windmill .....	1										1							
Derrick .....	1								1									
WEAPONS & IMPLEMENTS.	32																	
Gunshot .....	29						2	3	4	6	6	4	2				2	
Stab .....	2										2							
Other Wounds .....	1												1					
FALLS AND BLOWS .....	32																	
Fall down Stairs .....	2	1											1					
" from Building .....	1										1							
" from Wagon .....	8	1				1					1	1		2		1	1	
" from Windmill .....	1												1					
" (not stated how) ..	17	1					2	1		1		2	2	2	2	1	3	
Slung-shot .....	1										1							
Blasting .....	2												2					
BURNS, SCALDS AND EXPLOSIONS.	32																	
Burns .....	22	3	1	1	1	1	2	6		2			2	1		2		
Scalded .....	9	3	1		2	1			1									1
Explosion .....	1																	1
WEATHER AGENCIES .....	42																	
Lightning .....	26		1					2	4	2	7	3	3	3	1			
Freezing .....	10									1	1	2	1		1	2	1	



VIOLENT DEATHS, 1887—*Continued.*

CAUSES.	AGES AT DEATH.																
	Total all Ages.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.
Storms .....	2												1		1		
Exposure .....	4	1								1			1	1			
ASPHYXIA.....	105																
(a) Drowning.....	76	3	3	1	1	2	2	9	12	6	18	9	3	4			3
(b) Suffocation .....																	
Strangulation .....	5	1	1	1						2							
Gas.....	4									2				1			1
Coal Gas.....	1										1						
Digging Well.....	1												1				
Landslide.....	1						1										
Caving Dirt .....	3					1				2							
Otherwise.....	14	9		1							2						2
POISON .....	16																
Ammonia .....	1															1	
Opium, Morphia.....	3			1								1	1				
Creosote .....	1					1											
Fly Poison.....	1					1											
Nuts .....	2					1	1										
Decayed Fruit .....	1							1									
Smut on Corn .....	1								1								
Tartar Emetic .....	1								1								
Ether.....	1									1							
Cyanide Potassium....	1											1					
Strychnine.....	1													1			
Kind not stated .....	2					1							1				
OTHER AND ILL-DEFINED CAUSES .....	234																
Injuries at Birth .....	23	23															
HEMORRHAGES.																	
Navel .....	2	2															
Other.....												1		1			
Neglect.....	1	1															
Operation.....	7			1						2	2		1	1			
Concussion of Brain...	10	3					1	1		1	1	1	1				1
Sudden Death.....	5								1	1				1	1	1	
Found Dead .....	1	1															
Gored by Bull.....	4						1					1		1	1		
Killed by Cow .....	1									1							
Neck Broken .....	4									1	1			1	1		
Falling Tree.....	7									4	2	1					
Gangrene following accident .....	1									1							
Shock from Injury,....	3						1			1		1					

VIOLENT DEATHS, 1887—*Concluded.*

CAUSES.	AGES AT DEATH.																
	Total all Ages.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.
Shock .....	4	1					1		1	1	1						
Bite of Rattlesnake.....	1							1									
Traumatic Pleurisy.....	1									1							
“ Peritonitis.....	5						1		2			1	1				
Injury to Spine .....	8									6				1	1		
Injuries (not stated)....	2								1	1							
Rupture abdominal Muscles.....	1												1				
Rupture Artery .....	1										1						
“ Spleen .....	1										1						
Fracture Skull.....	13							1		5	4			2	1		
Wound of Liver.....	2										1	1					
Developmental Disease	1	1															
Crushed .....	1										1						
Cause not stated .....	114	10	2	4	2	2	5	3	4	23	10	9	8	5	2		7
SUICIDE.....	53																
Hanging .....	9									1	2	2	1	1	1		1
Shooting .....	9										5	1	2	1			
Cut Throat.....	2											1	1				
Stab.....	1												1				
Strychnine.....	1									1							
Opium .....	1														1		
Insane .....	2									1	1						
Not stated .....	28						1		1	6	3	6	5		1		2
Poison .....	2									1		1					
Paris Green.....	1												1				
MURDERED.....	12	2						1		3	2		1				3

TABLE NO. XXXVI.—DEATHS IN THE CITY OF ST. PAUL, RAMSEY COUNTY, DURING 1886, BY  
[CAUSE, SEX, COLOR, SOCIAL STATE, AGE AND NATIVITY.  
(*Light faced type, males; Dark faced type, females.*)

CAUSE.	SEX.		COLOR.		SOCIAL STATE.			AGE.											NATIVITY.												
	Total.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	United States.	Foreign.	Unknown.	
Scarlatina.....	59	34	25	...	34	24	1	32	24	1	9	1	3	1	3	1	6	1	1	...	...	...	...	...	...	...	...	17	17	1	...
Diphtheria.....	94	53	41	...	41	41	1	41	41	1	1	1	1	1	1	1	20	2	1	...	...	...	...	...	...	...	...	14	10	31	...
Quincy and Mumps.....	3	1	2	...	2	2	1	2	2	1	1	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	14	27	...	...	
Croup.....	56	25	31	...	31	25	1	31	31	1	1	1	1	1	1	1	5	3	1	...	...	...	...	...	...	...	...	13	18	1	...
Pertussis.....	8	6	2	...	6	6	1	6	6	1	1	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	1	1	2	...	
Typhoid fever.....	72	40	32	...	32	40	1	32	32	1	1	1	1	1	1	1	5	1	...	...	...	...	...	...	...	...	1	25	1	...	
Other Fevers.....	1	1	...	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	1	2	1	...	
TOTAL Miasmatic Diseases.....	203	100	133	...	132	100	1	121	111	22	30	11	18	20	13	11	38	6	17	7	9	5	1	1	1	1	67	92	1	...	
Dysentery.....	7	3	4	...	3	4	1	3	3	1	1	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	116	175	2	...	
Diarrhea and Cholera Morbus.....	9	5	4	...	5	4	1	5	5	1	1	1	1	1	1	1	2	1	...	...	...	...	...	...	...	...	1	3	1	...	
Diarrheal Dis. of Children.....	239	136	103	...	103	136	2	103	103	1	1	105	23	3	3	2	1	1	...	...	...	...	...	...	...	...	2	46	84	4	...
TOTAL DIARRHOEAL DISEASES.....	255	144	111	...	111	144	2	109	109	2	2	149	23	3	4	1	1	1	...	...	...	...	...	...	...	...	1	36	64	3	...
	255	144	111	...	253	144	2	251	251	4	4	196	38	3	6	4	1	1	...	...	...	...	...	...	...	...	1	47	91	6	...
	255	144	111	...	253	144	2	251	251	4	4	196	38	3	6	4	1	1	...	...	...	...	...	...	...	...	1	39	69	3	...
																			...	...	...	...	...	...	...	...	86	160	9	...	

[illegible]

—\*Unknown sex.





Heart Diseases.....	{	46	22	24	...	22	...	2	31	20	...	1	1	4	7 2	2 4	...	2	7 15
TOTAL DISEASES OF CIRCULATING SYSTEM.....		46	22	24	...	46	...	5	1	40	1	...	1	8	12 4	5 11	...	2	12 12
Asthma.....	{	3	2	1	...	1	...	...	...	2	...	...	...	...	1	1	...	1	1
Bronchitis.....	{	68	36	32	...	33	1	...	...	25	2	...	2	...	1	1	...	1	14
Pneumonia and Pleurisy.....	{	124	70	54	...	70	...	...	...	28	9	...	1	...	1	1	...	1	18 14
						53	1	...	...	42	7	...	3	...	7 8	3	...	27 26	1
						107	1	...	...	31	45	...	6	...	7 9	3	...	1	52 55
						86	1	...	...	64	...	...	7	...	8 6	3 2	...	1	46 40
TOTAL DISEASES OF RESPIRATORY ORGANS.....		195	108	87	...	183	2	...	...	54	75	26	14	7	6	17 9	6 5	1	98 95
Enteritis, Peritonitis and Gastritis.....	{	67	30	37	...	30	...	18	...	12	14	2	...	1	1	3	1	2	15
Hernia.....	{	1	...	1	...	37	...	17	...	20	9	2	...	1	1	8	6	1	21 16
Ascites.....	{	1	...	1	...	1	...	1	...	1	1	...	...	...	...	1	...	1	1
Other Diseases of Stomach.....	{	4	3	1	...	1	...	1	...	1	1	...	...	...	1	1	...	1	3
Diseases of Liver.....	{	9	8	1	...	1	...	1	...	1	1	...	...	...	1	2	1	...	4
						82	41	41	...	41	...	2	...	1	1	3	4	6 6	3 3
						82	41	41	...	18	...	23	10	2	1	1	8	7 2	4 1
TOTAL DISEASES OF DIGESTIVE ORGANS.....		82	41	41	...	82	...	38	...	44	26	4	...	1	1	2	12	13 8	7 4
Disease of Glands.....	{	2	1	1	...	1	...	1	...	1	...	1	...	...	1	...	...	1	1
Addison's Disease.....	{	1	1	...	...	1	...	1	...	1	...	1	...	...	1	...	...	1	1
		3	2	1	...	2	...	1	...	1	...	1	...	...	1	...	...	1	1
		3	2	1	...	1	...	1	...	1	...	2	...	...	1	...	...	1	1
TOTAL DISEASES OF LYMPHATIC SYSTEM.....		3	2	1	...	3	...	1	...	1	...	2	...	...	1	...	...	1	1
Diseases of Urinary Organs.....	{	39	25	14	...	24	1	8	...	17	3	...	1	...	1	...	6	4	2 2
		39	25	14	...	14	...	4	...	10	...	1	...	2	1	1	2	1	7 18
TOTAL DISEASES OF URINARY ORGANS.....		39	25	14	...	38	1	12	...	27	3	1	...	3	2	2	7	6 5	6 3
Generative Organs.....	{	3	2	1	...	2	...	1	...	1	1	...	...	...	...	...	1	...	1
		3	2	1	...	1	...	1	...	1	...	1	...	...	...	...	1	...	1
TOTAL DISEASES OF GENERATIVE ORGANS.....		3	2	1	...	3	...	1	...	2	1	...	...	...	...	...	1	...	2 1

—\*Unknown sex.

DEATHS IN THE CITY OF ST. PAUL, RAMSEY COUNTY, DURING 1886, BY CAUSE, SEX, COLOR,  
SOCIAL STATE, AGE AND NATIVITY.—*Continued.*

[illegible]

\_\_\_\_\_ \*Unknown sex.

DEATHS IN THE CITY OF ST. PAUL, RAMSEY COUNTY, DURING 1886, BY CAUSE, SEX, COLOR,  
SOCIAL STATE, AGE AND NATIVITY.—*Concluded.*

	SEX.		COLOR.		SOCIAL STATE.			AGE.											NATIVITY.												
	Total.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	United States.	Foreign.	Unknown.	
Total Miasmatic Diseases.....	293	160	133	.....	292	1	2	232	.....	61	21	89	34	29	18	69	11	14	25	11	16	6	.....	.....	.....	.....	.....	116	175	2	.....
Total Diarrhical Diseases.....	255	141	111	.....	253	.....	2	251	.....	4	196	38	8	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	86	160	9	.....
Total Zoonotic Diseases.....	1	1	.....	.....	.....	.....	.....	2	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
Total Venereal Diseases.....	12	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total S-plic Diseases.....	34	12	22	.....	34	.....	.....	5	.....	.....	29	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	20	1	.....
Total Dietetic Diseases.....	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Constitutional Diseases.....	208	102	106	.....	207	1	.....	43	.....	165	13	5	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	78	108	22	.....
Total Developmental Diseases.....	336	209	176	11	333	2	11	323	.....	73	310	11	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	272	119	5	.....
Total Diseases of Nervous System.....	174	92	82	.....	173	1	.....	142	.....	82	82	23	12	6	3	8	4	4	10	8	3	4	7	.....	.....	.....	.....	90	78	6	.....
Total Disease of Organs of Sense.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Diseases of Circulating Organs.....	45	22	24	.....	46	.....	.....	5	.....	1	40	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19	27	.....	.....
Total Diseases of Respiratory Organs.....	195	108	87	.....	193	2	.....	141	.....	54	75	26	14	7	6	1	1	1	10	12	4	5	11	.....	.....	.....	.....	98	145	2	.....
Total Diseases of Digestive Organs.....	52	41	41	.....	82	.....	.....	38	.....	44	26	4	.....	1	1	2	3	3	12	13	8	7	4	.....	.....	.....	.....	42	39	1	.....
Total Diseases of Lymphatic System.....	3	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Diseases of Urinary Organs.....	39	25	14	.....	38	1	.....	12	.....	27	8	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	26	1	.....
Total Diseases of Genenerative Organs.....	3	2	1	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Diseases of Parturition.....	8	.....	8	.....	7	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Diseases of Parturientary System.....	5	2	3	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Violent Deaths.....	94	78	16	.....	94	.....	.....	26	.....	68	3	5	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29	58	7	.....
Total Ill-defined and unspecified.....	44	22	19	3	44	.....	.....	15	.....	.....	29	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	18	5	.....
GRAND TOTAL.....	1887	1027	846	14	1874	9	4	1241	1	645	744	153	72	51	34	104	31	53	169	145	94	78	62	50	25	22	890	936	61	.....	.....

TABLE NO. XXXVII.—DEATHS IN THE CITY OF ST. PAUL, RAMSEY COUNTY, DURING 1887, BY CAUSE, SEX, COLOR, SOCIAL STATE, AGE AND NATIVITY.  
(*Light faced type, males; dark faced type, females.*)

CAUSE.	SEX.			COLOR.		SOCIAL STATE.			AGE.										NATIVITY.												
	Total.	Males.	Females.	Unknown.	White.	Colored.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, Village or Township.	Other Min-nesota.	Other U. S.	Foreign.	Unknown.
					Unknown.	Unknown.																									
Menses.....	62	35	27	..	35	27	..	25	1	..	..	11	10	9	1	1	1	1	1	1	1	1	1	1	1	16	1	17	1	Unknown.	
Scarlatina.....	35	23	12	..	23	12	..	23	..	..	..	12	3	3	2	2	2	3	3	1	1	1	1	1	1	9	1	13	4	..	
Whooping Cough.....	2	1	1	..	1	1	..	12	..	..	..	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	..	6	3	1	
Croup.....	45	25	19	*1	19	25	1	23	1	..	1	2	2	5	3	4	2	2	2	2	2	1	1	1	1	13	1	6	1	..	
Diphtheria.....	73	29	44	..	29	44	..	21	..	..	..	4	3	3	1	1	2	1	2	1	1	1	1	1	1	31	2	10	7	..	
Typhoid Fever.....	141	87	54	..	87	54	..	42	2	..	..	6	4	4	5	3	17	1	6	11	3	1	1	1	1	17	3	17	24	57	1
Ill-Defined Fevers.....	3	1	2	..	1	2	..	34	18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	7	15	26	1	
TOTAL Miasmatic Diseases.....	361	201	159	*1	158	103	1	175	20	3	3	19	16	30	13	9	22	12	12	43	13	4	1	1	1	54	6	68	72	1	
Cholera Morbus.....	361	201	159	*1	360	1	..	311	42	4	4	40	33	46	26	18	53	23	20	68	19	8	2	5	..	96	15	126	119	5	
Diarrhoea, Dysentery.....	6	3	3	..	3	3	..	2	..	1	..	1	1	1	1	1	1	1	1	2	1	1	1	1	1	..	..	2	3	..	
Diarrhoeal Diseases of Children.....	285	156	139	..	155	139	..	156	4	1	..	126	22	3	4	1	..	..	..	..	..	..	..	..	..	..	3	5	5	16	2
TOTAL DIARRHOEAL DISEASES.....	311	164	147	..	309	2	..	306	3	2	2	131	22	3	4	1	..	..	..	2	1	..	..	..	..	..	89	5	59	11	..
	311	164	147	..	309	2	..	306	3	2	2	241	43	10	9	2	..	..	..	2	1	..	..	..	..	..	153	10	120	28	..





DEATHS IN THE CITY OF ST. PAUL, RAMSEY COUNTY, DURING 1887, BY CAUSE, SEX, COLOR,  
SOCIAL STATE, AGE AND NATIVITY.—Continued.

CAUSE	SEX.		COLOR.		SOCIAL STATE.			AGE.										NATIVITY.													
	Total.	Males.	Female.	Unknown.	White.	Colored.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, Village, or Township.	Other Min-neola.	Other U. S.	Foreign.	Unknown.
Infantile Debility	136	71	65	..	71	..	65	..	..	..	62	6	1	1	..	..	..	..	..	..	..	..	..	..	..	..	49	2	13	7	..
Cyanosis	5	3	2	..	3	..	3	..	..	..	61	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44	19	1	1	..
Other Developmental Disease	5	4	1	..	4	..	2	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..
Old Age	81	43	38	..	43	..	1	16	22	4	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	8	1	3
					38	..	1	6	28	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	19	18	..
					223	4	185	16	22	4	173	8	1	1	..	..	..	..	..	..	..	..	..	..	..	..	162	2	22	38	3
	434	227	196	11	191	5	159	6	28	3	153	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	127	1	47	20	1
					*4	*7	*11	..	..	..	*11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	511	..	..	..	..
TOTAL DEVELOPMENTAL DISEASES	434	227	196	11	418	16	355	22	50	7	337	13	1	1	..	..	..	..	..	..	..	..	..	..	..	..	300	3	63	58	4
Meningitis	95	58	37	..	56	2	51	5	..	2	22	8	5	4	1	3	8	5	1	1	1	1	2	..	..	..	21	2	23	12	..
Apoplexy	24	15	9	..	37	..	3	3	..	..	17	6	1	1	1	3	1	1	1	1	1	1	3	6	..	..	9	1	2	5	1
Paralysis	12	6	6	..	9	..	2	1	6	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	6	..
Insanity	3	3	..	..	6	..	2	2	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	3	3	..
Chorea	1	1	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..
Epilepsy	1	1	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Convulsions	2	1	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Infantile Convulsions	114	66	48	..	65	1	66	..	..	..	37	5	2	1	1	1	1	1	..	..	..	..	..	..	..	..	38	2	23	6	1
Tetanus	2	1	1	..	48	..	1	..	..	..	39	6	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	37	3	1	..

Other Diseases of Nervous System.....	{	13	9	4	4	4	8	1	1	1	1	2	1	1	2	1	1	2	6	1
TOTAL DISEASES OF NERVOUS SYSTEM.....		267	160	107	107	157	8	134	19	4	3	83	15	7	6	2	6	1	4	39
Heart Diseases.....	{	257	160	107	107	204	3	227	25	12	3	143	29	11	8	4	11	2	7	11
TOTAL DISEASES OF NERVOUS SYSTEM.....		77	40	37	36	1	18	16	17	4	1	3	4	1	1	2	3	4	8	15
Heart Diseases.....	{	77	40	37	36	1	18	16	17	4	1	3	4	1	1	2	3	4	8	15
TOTAL DISEASES OF CIRCULATORY SYSTEM.....		77	40	37	36	1	18	16	17	4	1	3	4	1	1	2	3	4	8	15
Asthma.....	{	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Bronchitis.....	{	74	40	34	34	40	37	3	30	4	15	7	5	1	1	1	1	1	1	1
Pneumonia.....	{	132	69	63	63	67	2	50	15	1	3	14	12	7	1	2	3	8	5	6
Pleurisy.....	{	8	3	3	3	3	3	1	2	8	3	12	13	10	2	4	2	1	3	5
Other Diseases of Respiratory System.....	{	5	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL DISEASES OF RESPIRATORY ORGANS.....		215	115	100	100	113	2	91	20	1	3	34	19	11	5	2	7	1	3	9
Quinsy.....	{	215	115	100	100	213	2	175	23	8	8	62	40	27	8	3	12	3	4	12
Hæmatemesis.....	{	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Enteritis.....	{	12	6	6	6	6	6	4	4	2	1	1	1	1	1	1	1	1	1	1
Ilæus.....	{	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hernia.....	{	6	5	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
Peritonitis.....	{	6	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ascites.....	{	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Jaundice.....	{	3	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Cirrhosis of Liver.....	{	8	3	3	3	3	3	4	4	1	1	1	1	1	1	1	1	1	1	1
Other Diseases of Liver.....	{	11	9	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL DIGESTIVE ORGANS.....		48	34	14	14	14	14	19	11	2	2	6	3	1	1	1	2	3	8	3
Other Diseases of Liver.....	{	48	34	14	14	14	14	19	11	2	2	6	3	1	1	1	2	3	8	3
TOTAL DIGESTIVE ORGANS.....		48	34	14	14	14	14	19	11	2	2	6	3	1	1	1	2	3	8	3

\*Unknown sex.

DEATHS IN THE CITY OF ST. PAUL, RAMSEY COUNTY, DURING 1887, BY CAUSE, SEX, COLOR,  
SOCIAL STATE, AGE AND NATIVITY.—Continued.

CAUSE.	SEX.		COLOR.		SOCIAL STATE.		AGE.										NATIVITY.														
	Total.	Males.	Females.	Unknown.	White.	Colored.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	(City, Village or Township.	Other Minn.	Other U. S.	Foreign.	Unknown.	
Nephritis.....	12	6	6		6		3	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	4	2		
Bright's Disease.....	6	2	4		4		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Uremia.....	5	2	3		3		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Diseases of Bladder.....	1	1			1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Other Urinary Diseases.....	2	2			2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	26	13	13		13		9	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
TOTAL DISEASES OF URINARY ORGANS.....	26	13	13		26		14	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Miscarriage.....	1		1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Puerperal Mania.....	2	2			2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Puerperal Convulsions.....	4	4			4		4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Placenta Previa.....	1	1			1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Other Accidents of Childbirth.....	2		2		2		2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
TOTAL DISEASES OF PARTURITION.....	10	10			10		10	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
INTEGUMENTARY SYSTEM.....	1		1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Accidents.....	97	83	14		83		50	25	2	6	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Homicide.....	3		3		3		12	2	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Suicide.....	7	7			7		1	3	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	107	90	17		90		54	28	2	6	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
					16		13	3	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
TOTAL VIOLENT DEATHS.....	107	90	17		107		67	31	2	7	7	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	



TABLE NO. XXXVIII.—DEATHS IN THE CITY OF MINNEAPOLIS, HENNEPIN COUNTY, DURING 1886,  
SHOWING SEX, COLOR, SOCIAL STATE, AGE AND NATIVITY.  
(*Light face type, males; dark face type, females.*)

CAUSE.	SEX.		COLOR.		SOCIAL STATE.			AGE.										NATIVITY.															
	Totals.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, Village or Township.	Other Minn.	Other U. S.	Foreign.	Unknown.	
Measles.....	48	22	26		26	22		25	1			3	8	4	3	1	2	1		1	2						1	14	4	2	1	3	
Scarlatina.....	59	23	36		36	23		35	1			3	7	3	3	6	1	1	1	1							1	18	10	7	2	1	
Diphtheria.....	169	80	89		89	80		87	2			4	14	25	9	2	19	12	1	1		1					1	57	10	15	6	1	
Croup.....	74	41	32	*1	32	41		32				7	5	5	5	3	7										1	20	3	4	1	4	
Pertussis.....	27	12	15		15	12		15				8	3	1	1	1											1	12	3	1		1	
Typhoid fever.....	83	47	36		36	47		26	7		2	1	2	1	1	2	2	5	8	9	6	2	1	1			9	1	9	17	21	5	
								216	7		2	22	37	33	24	18	33	12	4	30	9	2	1				112	25	35	40	13		
	400	225	234	*1	234	225		220	14			29	38	39	20	13	41	18	10	12	8	2	2			2	130	24	37	34	9		
								*1				*1																					
TOTAL Miasmatic Diseases.....	400	225	234	1	400	225		437	21		2	51	76	72	44	31	74	30	11	42	17	4	2	1			2	242	49	73	74	22	
Cholera Morbus.....	3	2	1		1	2		1	1		1									1	1			1			1				2	1	
Diarrhea and Dysentery.....	10	2	8		8	10		7	1			2	1							1	2			1			1	4	7	1	3	1	
Diarrheal diseases of Children.....	194	109	84	*1	84	109		84				63	18	2	1		1											66	4	8	5	1	
								*1																									
								111	1	1		32	25	1	1		1			1	3	1	1	1				80	7	16	6	4	
	267	113	93	*1	93	113		91	2			65	19	2	1					1				1			1	70	4	9	8	2	
								*1				*1																					
TOTAL DIARRHEAL DISEASES.....	267	113	93	1	267	113		203	3	1		148	44	3	2		1			2	3	1	2				1	151	11	25	11	6	





DEATHS IN THE CITY OF MINNEAPOLIS, HENNEPIN COUNTY DURING 1886, SHOWING SEX, COLOR,  
SOCIAL STATE, AGE AND NATIVITY.—Continued.

CAUSE.	SEX.		COLOR.		SOCIAL STATE.			AGE.										NATIVITY.															
	Totals.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	(City, Village or Township.	Other Minn.	Other U. S.	Foreign	Unknown.	
Atelectasis	4	2	2		2	2		2				2															1	2		1			
Cynosis	5	3	2		2	2		2				2															2						
Spina Bifida	3	2	1		2	1		2				2															1						
Infantile Debility	95	53	40	40	40	40	40	40	40	40	40	38	2	1													39	2		5	1	2	
Old Age	87	43	43	43	43	43	43	43	43	43	31	12	7														35	2		22	16	4	2
	392	210	165	17	390	2	306	38	47	1	299	5	1														150	6	29	18	7		
TOTAL DEVELOPMENT DISEASES	392	210	165	17	390	2	306	38	47	1	299	5	1														112	3	24	18	8		
Apoplexy	13	9	4	4	4	4	2	4	2	1																	60	27	274	9	54	37	18
Paralysis	7	3	4	4	4	4	1	1	1																					1	2	1	
Insanity	1	1	1	1	1	1	1	1	1																					1	2	1	
Convulsions	1	1	1	1	1	1	1	1	1																					1	2	1	
Infantile Convulsions	67	31	35	35	35	35	31	31	31	23	4	1	2														1	24	6	5			
	80	47	33	33	33	33	27	27	27	26	4	2	4															35	8	6	9	2	
Meningitis	80	47	33	33	33	33	27	27	27	26	4	2	4															14	6				



DEATHS IN THE CITY OF MINNEAPOLIS, HENNEPIN COUNTY, DURING 1886, SHOWING SEX, COLOR, SOCIAL STATE, AGE AND NATIVITY.—Continued.

CAUSE.	SEX.		COLOR.		SOCIAL STATE.			AGE.										NATIVITY.														
	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, Village or Township.	Other Minn.	Other U. S.	Foreign.	Unknown.	
Generative Organs.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
TOTAL DISEASES OF GENERATIVE ORGANS.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Accidents of Child Birth.....	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
TOTAL DISEASES OF PARTURITION.....	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Diseases of Organs of Locomotion.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL DISEASES OF LOCOMOTOR ORGANS.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Integumentary System.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL DISEASES OF INTEGUMENTARY SYSTEM.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Accidents.....	79	64	12	64	34	22	21	8	9	1	1	1	1	1	1	2	2	2	16	14	10	1	1	1	1	1	1	1	1	1	1	1
Suicide.....	12	10	2	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	2	2	2	2	2	2	2	2	2	2	2	2
TOTAL VIOLENT DEATHS.....	91	74	14	80	2	49	30	213	11	2	1	1	1	1	4	4	4	20	17	13	4	8	8	7	16	2	23	33	17	3	17	3
Dropsy.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Debility.....	7	2	5	5	1	5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Unknown.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Unclassified.....	20	11	9	9	5	3	1	2	2	1	1	1	1	1	1	1	1	1	3	3	2	2	2	2	2	2	2	2	2	2	2	2
TOTAL ALL DEFINED AND NOT SPECIFIED.....	29	14	15	15	6	4	1	3	3	1	1	1	1	1	1	1	1	1	3	2	1	5	4	2	2	2	2	2	2	2	2	2
TOTAL ALL DEFINED AND NOT SPECIFIED.....	29	14	15	29	12	12	2	3	3	1	1	1	1	1	2	5	1	2	5	5	1	4	7	4	2	6	11	3	3	3	3	3
- — <sup>a</sup> Unknown sex.																																

—<sup>a</sup> Unknown sex.

Total Miasmatic Diseases.....	460	225	234	1	460	.....	437	21	.....	2	51	76	72	44	31	74	30	14	42	17	4	2	1	.....	2	242	49	73	74	
Total Diarrhoeal Diseases.....	207	113	93	1	207	.....	208	3	1	.....	148	44	8	2	2	1	.....	.....	.....	2	8	1	2	.....	1	151	11	25	14	
Total Zoonous Diseases.....	2	2	.....	.....	2	.....	4	.....	.....	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	
Total Venereal Diseases.....	68	18	50	.....	68	.....	25	42	.....	1	12	2	.....	3	.....	.....	2	2	.....	28	13	4	2	.....	.....	18	1	15	31	
Total Septic Diseases.....	1	.....	1	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	
Total Constitutional Diseases.....	291	142	147	1	288	5	135	121	14	21	28	7	8	2	.....	9	2	29	73	59	26	25	16	4	1	2	44	25	89	11
Total Developmental Diseases.....	392	210	165	17	390	2	306	38	47	1	299	5	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	
Total Diseases of Nervous System.....	222	120	101	1	222	.....	186	27	5	4	90	24	14	12	6	12	5	9	8	11	10	12	7	60	27	274	9	54	37	
Total Diseases of Circulatory System.....	55	32	23	.....	55	.....	20	24	7	4	5	.....	.....	.....	.....	3	4	2	6	6	6	7	15	.....	.....	5	4	23	19	
Total Diseases of Respiratory System.....	225	105	120	.....	221	4	190	18	6	11	92	35	21	4	2	13	4	3	16	11	9	7	7	.....	.....	1	134	15	23	38
Total Diseases of Digestive Organs.....	100	53	47	.....	100	.....	47	35	6	12	20	5	8	5	1	3	1	.....	15	12	12	11	10	.....	.....	2	18	30	28	13
Total Diseases of Urinary Organs.....	41	19	21	1	41	.....	10	22	3	6	1	.....	.....	.....	.....	3	2	.....	6	9	4	10	5	.....	.....	8	1	15	18	4
Total Diseases of Generative Organs.....	2	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Total Diseases of Parturition.....	8	.....	8	.....	8	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	2	.....	.....	.....	.....	.....	1	1	.....	2	2
Total Diseases of Locomotor Organs.....	2	1	1	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Total Diseases of Integumentary Organs.....	91	74	14	3	89	.....	46	30	2	13	11	2	1	1	.....	4	4	4	20	17	13	4	3	.....	.....	7	16	2	23	33
Total Violent Deaths.....	29	14	15	.....	29	.....	12	12	2	3	3	.....	1	.....	.....	.....	1	2	5	5	1	4	7	.....	.....	.....	.....	6	14	8
Total Ill-defined and not Specified.....	29	14	15	.....	29	.....	12	12	2	3	3	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
GRAND TOTAL.....	2201	1129	1046	26	2188	11	1625	405	93	78	764	201	125	75	40	122	55	65	227	167	91	84	75	64	28	18	1041	151	427	135

\*Unknown sex.



TABLE NO. XXXIX. DEATHS IN THE CITY OF MINNEAPOLIS DURING 9 MONTHS OF 1887 (APRIL-DEC.), SHOWING SEX, COLOR, SOCIAL STATE, AGE AND NATIVITY. (Light faced type, males; dark faced type, females.)

DISEASE.	SEX.		COLOR.		SOCIAL STATE.		AGE.										NATIVITY.																	
	To al.	Males.	Females.	Unknown.	White.	Colored.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	City, Vil- lage or Township.	Other Minnesota.	Other U. S.	Foreign.	Unknown.				
					Unknown.																													
Measles..... Scarlatina..... Diphtheria..... Croup..... Pertussis..... Typhoid Fever.....	8	5	3	...	5	3	5	3	...	...	2	1	1	1	1	1	...	...	...	...	...	...	...	...	...	3	1	...	...	1	...	...		
	29	13	16	...	13	16	13	16	...	...	1	2	3	4	4	3	...	...	...	...	...	...	...	...	...	3	2	5	1	2	...	...		
	146	65	81	...	65	81	64	1	...	1	2	7	10	7	16	22	7	2	1	...	...	...	...	...	...	9	10	10	18	8	1	1		
	56	29	27	...	29	27	26	1	...	1	2	4	7	4	2	9	...	...	...	...	...	...	...	...	...	20	4	3	7	...	...			
	3	1	2	...	1	2	2	1	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	3	...	...			
	149	90	59	...	80	59	57	25	17	...	1	2	1	1	...	...	...	...	...	...	...	...	...	...	...	2	3	6	14	69	2	...		
	391	203	188	...	202	188	169	25	18	1	6	20	15	12	20	32	10	13	58	10	3	1	1	...	2	74	21	28	44	77	3	...		
					188		167	18	12		6	15	17	19	17	46	17	13	21	9	3	...	1	...	4	75	19	44	44	6	...	...		
	TOTAL MEASMATIC DISEASES.....	391	203	188	...	390	1	336	43	210		12	35	32	31	37	78	27	26	79	19	6	1	2	...	6	149	40	72	221	9	...	...	
	Diarrhoea..... Dysentery..... Cholera Morbus..... Diarrhoeal Diseases of Children.....	6	3	3	...	3	3	2	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	1	...	...
3		1	2	...	1	2	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	
3		2	1	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	
258		133	123	...	130	123	133	...	...	...	113	15	4	...	...	...	...	...	...	...	...	...	...	...	...	1	104	6	12	7	4	...	...	
					119	3	123	...	...	...	98	19	2	...	...	...	...	...	...	...	...	...	...	...	...	4	103	6	8	5	1	...	...	
270		139	129	...	136	129	137	2	...	...	113	16	4	...	...	...	...	...	...	...	...	...	...	...	...	...	108	6	12	9	4	...	...	
					125	3	126	3	...	...	100	19	2	...	...	...	...	...	...	...	...	...	...	...	...	...	4	105	6	11	6	1	...	...
270		139	129	...	263	3	265	5	...	...	214	35	6	...	2	1	...	...	...	...	2	1	2	1	...	6	213	12	23	15	7	...	...	
TOTAL DIARRHOEAL DISEASES.....		270	139	129	...	263	3	265	5	...	...	214	35	6	...	2	1	...	...	...	...	2	1	2	1	...	6	213	12	23	15	7	...	...



DEATHS IN THE CITY OF MINNEAPOLIS DURING 9 MONTHS OF 1887 (APRIL-DEC.), SHOWING SEX, COLOR,  
SOCIAL STATE, AGE AND NATIVITY.—Continued.

DISEASE.	SEX.		COLOR.		SOCIAL STATE.			AGE.										NATIVITY.																
	Total.	Males.	Females.	Unknown.	White.	Color-d.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yr.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, Vil- lage or Township.	Other Minn- nesota.	Other U. S.	Foreign.	Unknown.		
Atelectasis.....	9	4	4	1	4	4	4	4	4	4	4	3	1			1												4	4					
Cyanosis.....	8	6	2		6	6	2	2	2	2	2	6																4	4					
Other Congenital Diseases.....	2	1	1		1	1	1	1	1	1	1	2																2	2					
Still Births.....	105	58	35	12	33	57	1	56				58																58	33					
Old Age.....	68	37	31		37	37		2	18	14	3	35																33	22					
	357	194	146	17	146	17	2	115	14	16	1	111	2	6	1	2												152	109	2	25	15	93	
	357	194	146	17	354	1	2	201	32	30	4	278	8	1	2													17	109	5	20	93		
TOTAL DEVELOPMENTAL DISEASES.....																																		
Meninigitis.....	99	51	46	2	46	2	1	41	3	1	3	201	6	1	4	6	2	2	1	5	1	3	2	1	1	1	1	3	28	26	7	6	7	2
Apoplexy.....	27	9	18		18		1	2	13	1	1	1																4	10	2	4	7	3	
Softening of Brain.....	2	2	3		3		2	4	13	1	2	1																5	10	2	10	7	1	
Paralysis.....	3	1	3		3		1	2	1	1	1	1																1	1	1	1	1	1	
Epilepsy.....	1	1	1		1		1	1	1	1	1	27	5	1														1	1	1	1	1	1	
Convulsions.....	57	34	20	8	20		1	20	33	1	1	16	2															80	19	3	1	1	1	
Tetanus.....	2	2	2		2		2	2	3		2	1	2															1	1	1	1	1	1	

[illegible]

DEATHS IN THE CITY OF MINNEAPOLIS DURING 9 MONTHS OF 1887 (APRIL-DEC.), SHOWING SEX, COLOR,  
SOCIAL STATE, AGE AND NATIVITY.—*Concluded.*

CAUSE.	SEX.		COLOR.		SOCIAL STATE.			AGE.											NATIVITY.													
	Totals.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	(City, Vil- lage, or Township.	Other U. S.	Foreign			
{ Other Diseases of Liver..... }	7	3	4	...	3	...	...	1	1	1	2	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	2	1	...		
	84	47	37	...	47	...	...	21	15	3	9	...	1	...	1	2	1	2	6	7	7	4	3	1	...	3	13	5	20	4		
	84	47	37	...	84	...	...	35	36	4	9	12	1	1	2	3	2	2	12	16	13	6	6	3	...	2	6	3	15	9	4	
	TOTAL DISEASES OF DIGESTIVE SYSTEM.....																															
	3	2	1	...	2	...	...	1	1	1	...	...	...	...	...	...	1	...	1	...	...	1	1	...	...	...	...	...	1	...	2	
{ Bright's Disease..... }	16	7	9	...	7	...	...	11	3	1	2	...	...	...	...	1	...	1	...	2	2	2	3	1	...	...	...	1	1	3	2	
	10	9	1	...	9	...	...	13	3	2	1	...	1	...	1	1	1	1	2	1	1	1	1	...	...	...	1	1	1	4	1	
	29	18	11	...	18	...	...	5	7	3	8	...	1	...	1	1	1	3	4	2	4	2	2	3	...	...	1	1	2	12	2	
	29	18	11	...	29	...	...	10	12	4	3	1	1	1	1	3	1	1	3	6	2	6	5	...	...	...	3	2	5	16	3	
	TOTAL DISEASES OF URINARY SYSTEM.....																															
{ DISEASES ORGANS OF GENERATION..... }	4	...	4	...	4	...	...	2	2	...	...	...	...	...	...	...	...	...	3	1	...	...	...	...	...	...	...	...	1	3	...	
	7	...	7	...	7	...	...	7	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	3	3	4
	7	...	7	...	7	...	...	7	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	3	3	4
	3	1	2	...	2	...	...	1	1	...	1	...	...	...	...	...	...	...	...	1	...	1	1	...	...	...	...	1	1	...	1	
	3	1	2	...	3	...	...	1	2	...	1	...	...	...	...	...	...	...	...	1	...	1	1	...	...	...	...	1	1	...	1	
{ TOTAL DISEASES INTEGUMENTARY SYSTEM..... }	75	59	16	...	58	...	...	38	14	2	5	2	...	2	1	4	3	5	16	10	7	2	1	1	...	5	4	4	11	27	9	
	1	1	1	...	16	...	...	9	5	2	1	4	2	...	1	1	2	2	2	3	1	3	1	...	1	...	1	2	10	1	1	
	14	12	2	...	11	...	...	3	6	1	2	...	...	...	...	...	...	...	3	3	5	2	2	...	2	...	4	4	4	1	1	
	TOTAL DISEASES INTEGUMENTARY SYSTEM.....																															
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...





TABLE NO. XL. DEATHS IN THE CITY OF ST. PAUL DURING NINE MONTHS OF 1888, (JAN.-SEP.), BY MONTHS, SHOWING SEX, COLOR, SOCIAL STATE, AGE AND NATIVITY. (Light faced type, males; dark type, females.)

MONTH.	SEX.			COLOR.		SOCIAL STATE.			AGE.										NATIVITY.											
	Total.	Males.	Females.	White.	Colored.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, village or township.	Other Min- neota.	Other U. S.	Foreign.	Unknown.
January	165	91	73	88	3	63	19	7	2	28	7	3	2	2	4	4	1	1	12	9	6	8	3	6	1	27	1	32	30	
February	173	94	78	92	1	46	21	2	1	30	4	3	1	2	2	1	5	17	12	3	3	4	3	4	1	31	3	35	23	
March	193	116	77	112	2	48	18	7	3	34	9	3	2	2	3	2	7	11	9	7	6	4	2	1	42	2	46	24		
April	185	106	78	103	1	55	20	3	5	51	8	6	2	1	4	1	3	8	7	2	4	4	1	1	47	3	25	27		
May	200	112	84	111	2	54	20	8	3	32	11	4	1	3	1	2	4	16	14	3	9	6	1	2	26	3	31	45		
June	171	98	73	94	2	49	15	7	2	33	4	1	3	1	3	1	4	11	8	6	7	2	3	1	2	26	4	34	27	
July	300	161	137	133	2	114	21	5	15	82	13	5	2	2	1	1	5	20	9	6	5	3	2	1	2	66	5	52	34	
August	208	152	115	147	5	127	14	3	8	69	20	5	2	1	2	1	3	18	10	4	9	1	1	6	56	4	52	37		
September	250	131	117	130	1	108	19	3	6	53	16	2	2	3	2	1	6	14	8	6	6	2	5	1	3	49	8	84	35	
Totals	1061	554	507	1030	18	784	185	31	60	438	94	35	14	14	20	11	22	121	85	52	57	43	27	10	335	22	391	282		
Grand Total	1905	1061	844	1816	6	591	164	57	20	352	79	26	13	13	32	11	21	72	71	35	23	33	24	17	10	301	104	238	175	

\*Unknown sex.

TABLE NO. XL. DEATHS IN THE CITY OF MINNEAPOLIS DURING NINE MONTHS OF 1888, (JAN-SEP.), BY MONTHS, SHOWING SEX, COLOR, SOCIAL STATE, AGE AND NATIVITY. (Light faced type, males; dark type, females.)

MONTHS.	SEX.			COLOR.		SOCIAL STATE.			AGE.										NATIVITY.														
	Total.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, village or township.	Other Minn.	Other U. S.	Foreign.	Unknown.	
					Unknown.																												
January.....	226	112	113	*1	111	113	1	85	18	4	5	42	4	6	5	4	7	1	10	5	14	12	9	1	6	3	2	2	39	11	23	21	8
February.....	253	128	122	*3	122	122	4	94	22	4	8	40	12	8	3	3	4	3	2	21	10	5	4	6	3	7	2	3	46	8	32	31	7
March.....	282	141	141	..	137	140	3	100	29	6	6	50	6	7	4	2	7	2	3	19	14	5	6	8	3	6	2	3	57	12	32	23	17
April.....	252	147	102	*3	144	101	3	120	20	4	3	35	19	9	5	1	5	1	2	18	10	6	6	1	2	3	4	2	74	16	29	25	3
May.....	267	143	120	*4	142	117	1	111	25	4	3	34	12	12	3	1	4	1	6	17	13	6	5	3	2	1	1	73	9	24	30	7	
June.....	201	97	104	..	97	103	1	63	18	6	4	22	10	6	4	1	5	2	3	13	12	6	4	4	3	2	2	86	8	20	30	3	
July.....	262	151	109	*2	150	109	1	123	18	7	3	76	14	5	5	3	5	3	1	18	4	5	4	4	5	4	1	4	91	5	25	28	2
August.....	265	156	138	*1	154	138	2	133	13	5	2	90	17	7	1	2	2	1	6	9	3	3	4	2	3	2	2	101	6	24	23	2	
September.....	239	132	104	*3	130	104	2	97	25	5	5	53	11	3	7	1	3	6	4	15	10	5	7	5	1	5	1	65	9	24	28	6	
{ Males.....	1207	615	592	..	1187	1047	4	982	188	42	45	482	105	61	28	13	47	12	31	137	99	43	42	38	24	22	21	601	85	227	239	55	
{ Females.....	1053	532	521	..	1047	834	3	713	246	72	22	335	104	46	16	26	48	25	38	148	84	45	32	43	32	22	29	465	100	233	245	20	
{ Unknown.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
GRAND TOTAL.....	2277	1207	1053	17	2249	1919	9	1662	434	114	67	834	209	107	44	39	95	37	69	285	163	88	74	8	56	44	30	1082	185	460	484	76	

\*Sex Unknown





TABLE NO. XLII.—DEATHS IN MINNESOTA, REPORTED FOR THE FIRST NINE MONTHS OF 1888, SHOWING SEX, COLOR, SOCIAL STATE, AGE AND NATIVITY.

(Light faced type, males; Dark faced type, females.)

DISEASE.	SEX.				COLOR.		SOCIAL STATE.				AGE.																	NATIVITY.					
	Total.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, Village or Township.	Other Min-nesota.	Other U. S.	Foreign.	Unknown.	
Small Pox.....	3	2	1	...	2	1	...	2	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...	
Measles.....	163	90	73	...	71	2	1	69	4	...	...	13	18	13	7	3	6	5	3	2	2	1	1	...	...	...	...	36	23	14	14	1	
Scarlatina.....	87	36	51	...	51	...	...	50	1	...	...	4	9	8	5	3	11	3	2	1	...	1	1	...	...	...	...	28	14	5	4	...	
Diphtheria.....	548	271	276	1	276	...	...	273	2	...	1	9	25	28	28	23	91	44	8	4	2	1	1	...	...	...	1	122	80	46	24	4	
Quinsy-Mumps.....	23	12	11	...	11	...	...	9	...	...	...	2	2	1	...	...	2	1	2	1	1	1	1	...	...	...	...	5	3	1	2	...	
Croup.....	132	83	49	...	49	...	...	49	...	1	...	18	7	15	10	7	11	2	1	2	1	1	1	...	...	...	1	51	28	7	3	...	
Pertussis.....	84	37	47	...	47	...	...	47	...	...	...	21	8	2	1	1	2	2	...	...	...	...	...	...	...	...	...	19	11	9	10	...	
Typhoid Fever.....	356	219	137	...	137	1	...	86	50	4	15	...	...	4	1	3	6	12	29	42	17	15	2	4	...	...	3	26	11	9	61	1	
	1396	750	645	1	643	2	1	584	49	6	18	69	73	63	62	43	122	68	48	51	19	9	8	6	...	...	4	265	152	106	108	14	
TOTAL MIASMATIC DISEASES.....	1396	750	645	1	1391	3	2	1256	106	10	24	149	160	135	117	90	265	115	92	152	67	25	10	11	...	...	8	548	306	249	254	89	
Dysentery.....	28	13	15	...	15	...	...	11	4	...	3	2	4	...	1	...	...	...	...	2	2	1	1	...	...	...	1	5	3	3	2	...	
Diarrhoea and Cholera Morbus.....	74	39	34	1	34	...	...	24	8	1	1	7	3	1	...	1	2	3	4	5	3	1	1	...	...	...	...	7	7	10	12	...	
Diarrhoeal Dis. of Children.....	819	446	369	4	367	2	1	369	...	...	...	335	84	15	3	1	...	...	...	...	...	...	...	...	...	...	7	251	65	81	16	3	
	921	498	418	5	416	2	1	404	12	1	3	302	77	8	2	...	7	3	4	6	3	1	5	6	...	...	1	261	45	81	25	6	
TOTAL DIARRHOEAL DISEASES.....	921	498	418	5	914	6	1	888	26	2	5	653	166	24	6	2	10	4	8	14	8	2	6	9	...	...	9	557	120	175	55	13	
Syphilis.....	8	6	2	...	6	...	...	5	...	...	1	4	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	3	...	1	1	1	
TOTAL VENEREAL DISEASES.....	8	6	2	...	8	...	...	7	...	...	1	6	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	3	...	3	1	1	
Erysipelas and other Septic diseases.....	138	7	66	...	72	...	...	31	31	5	5	12	3	3	...	...	1	1	14	10	15	7	5	...	...	...	1	16	2	17	30	7	
Puerperal fever and Septicæmia.....	139	...	139	...	138	1	...	6	133	...	...	12	2	1	...	...	1	4	6	80	40	13	7	1	...	...	2	12	10	22	21	1	
	277	72	205	...	203	2	...	31	31	5	5	12	3	3	...	...	1	1	14	10	15	7	5	...	...	...	1	16	2	17	30	7	
TOTAL SEPTIC DISEASES.....	277	72	205	...	275	2	...	66	194	10	7	24	5	4	...	...	1	5	11	100	61	42	14	6	...	...	4	30	30	72	136	9	
Thrush.....	2	1	1	...	1	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	
TOTAL PARASITIC DISEASES.....	2	1	1	...	2	...	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	
Alcoholism.....	13	11	2	...	10	1	...	8	3	...	...	1	...	...	...	...	...	...	...	1	6	2	2	...	...	...	1	...	...	4	6	1	
TOTAL DIETETIC DISEASES.....	13	11	2	...	12	1	...	8	5	...	...	1	...	...	...	...	...	...	...	1	6	3	2	...	...	...	1	...	...	5	7	1	
Rheumatism.....	54	30	24	...	30	...	...	11	15	3	1	...	...	...	1	...	2	1	1	4	7	3	8	3	...	...	...	3	3	11	12	1	
Cancer.....	198	95	103	...	102	1	...	6	70	25	2	1	...	...	...	...	3	...	...	5	6	3	7	...	...	...	1	3	1	4	14	2	
Phthisis.....	889	422	467	...	465	2	3	213	169	19	21	1	5	4	...	...	5	11	31	145	93	54	32	36	...	...	3	30	45	105	230	12	
Hydrocephalus Taber Meningitis.....	73	38	35	...	35	...	...	35	...	...	...	17	5	2	1	...	6	16	49	175	101	51	29	11	...	...	2	45	72	122	210	18	
Other Tubercular Diseases.....	65	36	29	...	29	...	...	23	4	2	1	9	3	5	...	...	2	1	2	2	4	1	...	...	...	...	...	23	3	8	1	...	
	1279	621	658	...	614	4	3	302	259	34	26	29	11	8	4	5	15	15	33	163	114	77	64	65	...	...	4	67	58	156	320	20	
TOTAL CONSTITUTIONAL DISEASES.....	1279	621	658	...	655	3	...	255	340	53	10	38	20	10	3	4	13	19	52	183	124	77	55	47	...	...	3	79	85	182	289	23	



CAUSE.	SEX.				COLOR.			SOCIAL STATE.				AGE.																NATIVITY.						
	Total.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, Village or Township.	Other Minn-nesota.	United States.	Foreign.	Unknown.		
Old Age.....	760	411	349	....	409	1	1	19	206	169	17	....	....	....	....	....	....	....	....	....	....	....	....	4	262	144	1	....	....	123	273	15		
Infantile Debility and Premature Births..	936	538	392	6	347	2	2	10	97	228	14	....	....	....	....	....	....	....	....	....	....	....	....	2	211	135	1	....	3	126	212	8		
Still Birth.....	508	285	195	28	391	1	1	392	....	....	....	367	19	....	2	....	....	....	....	....	....	....	....	....	....	....	4	301	57	29	4	1		
					305	1	1	313	....	....	....	313	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	313	....	....	....	....	....	
					194	1	1	195	....	....	....	195	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	195	....	....	....	....	....	
	2204	1234	936	34	1249	6	13	876	206	169	17	839	14	1	1	....	1	....	....	....	....	....	....	4	262	144	2	....	712	86	171	279	20	
					932	4	4	597	97	228	14	562	19	....	2	....	....	....	....	....	....	....	....	2	211	135	5	496	60	155	216	9	9	
TOTAL DEVELOPMENTAL DISEASES .....	2204	1234	936	34	2181	6	17	1473	303	897	31	1401	33	1	3	....	1	....	....	....	....	....	....	6	473	279	7	1208	146	326	495	29	29	
Meningitis .....	460	256	204	....	253	2	1	225	25	2	4	99	41	14	9	5	13	15	8	18	14	3	12	6	....	....	1	119	43	53	33	8		
Apoplexy.....	91	52	39	....	204	....	....	180	19	4	1	72	35	13	9	9	16	10	10	13	6	3	4	....	....	1	101	37	40	24	2	2		
Paralysis.....	90	49	41	....	52	...	...	8	34	8	2	....	1	....	....	....	1	....	2	2	3	4	15	21	1	....	1	1	19	25	2	2		
Insanity and in Insane Asylums.....	91	58	33	....	39	...	...	5	26	8	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1	2	16	18	2	4		
Epilepsy.....	39	22	17	....	49	...	...	12	27	4	1	....	....	....	....	....	1	1	1	1	5	3	4	13	21	1	....	2	2	21	22	1	1	
Infantile Convulsions.....	407	241	166	....	58	...	...	31	21	5	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	1	....	4	22	31	1	1	
					33	...	...	9	21	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	2	11	18	2	1	
					17	...	...	11	6	...	...	2	....	1	....	....	2	....	1	5	7	7	3	2	....	....	1	7	6	6	4	...	3	
					239	1	1	241	....	....	....	194	35	6	...	3	4	1	3	5	...	1	1	....	....	....	1	158	51	22	...	...	3	
					165	1	1	166	....	....	....	122	33	11	2	2	4	....	....	....	....	....	....	....	....	....	2	104	43	15	3	1	1	
	1178	678	500	....	673	3	2	534	110	24	10	301	76	21	9	8	20	16	13	41	33	24	52	54	6	....	9	209	89	106	88	19	8	
					499	1	...	383	96	18	3	196	69	24	12	11	26	12	16	31	23	19	29	30	3	....	4	285	107	142	125	19	8	
TOTAL DISEASES OF NERVOUS SYSTEM.....	1178	678	500	....	1172	4	2	917	206	42	13	497	145	45	21	19	46	28	29	72	56	43	81	84	9	....	13	494	196	248	213	27	27	
Diseases of Heart and Blood Vessels.....	344	195	149	....	191	4	...	70	106	11	8	21	1	...	...	3	5	5	9	17	19	18	36	54	2	...	5	27	12	52	94	10	10	
					147	1	1	46	82	18	3	9	...	1	....	...	3	6	12	17	21	26	23	28	...	1	...	11	9	48	72	9	9	
TOTAL DISEASES OF CIRCULATORY SYSTEM	344	195	149	....	338	5	1	116	188	29	11	30	1	1	....	3	8	11	21	36	40	44	59	82	2	...	1	5	38	21	100	166	19	19
Asthma.....	40	24	16	....	24	...	...	7	15	2	...	1	1	1	....	...	1	....	....	....	....	2	3	5	12	...	...	1	1	3	3	17	....	...
Bronchitis.....	338	191	147	....	16	...	...	2	11	3	...	...	...	...	...	...	...	...	...	...	2	3	2	7	...	...	1	1	1	1	13	...	...	
Pneumonia.....	701	396	305	....	191	...	...	176	9	3	3	113	27	10	6	5	...	...	...	...	5	5	3	3	...	...	...	94	36	43	14	...	4	
					147	...	...	130	13	4	...	70	33	6	4	3	7	2	2	3	3	3	2	9	...	...	...	67	26	36	18	...	...	
Pleurisy.....	20	10	10	....	383	6	2	274	103	5	14	98	41	27	9	8	24	10	19	37	27	23	38	...	...	...	1	8	123	56	89	107	16	16
					303	1	1	206	82	15	2	77	33	20	11	9	16	12	12	29	20	19	19	21	3	1	3	108	50	52	86	9	9	
					10	...	...	3	6	...	1	1	...	...	...	...	...	...	...	...	2	2	1	2	...	...	...	...	1	1	3	5	...	...
					10	...	...	4	4	2	...	...	9	...	...	...	...	...	...	1	2	2	1	2	...	...	...	...	...	4	5	...	...	
	1099	621	478	....	613	6	2	460	133	10	18	213	69	38	16	13	28	12	21	45	34	28	31	60	3	1	9	224	96	138	143	20	20	
					476	1	1	342	110	24	2	147	67	26	15	12	23	14	15	34	27	26	25	39	3	1	4	176	77	93	122	10	10	
TOTAL DISEASES OF RESPIRATORY SYSTEM.	1099	621	478	....	1089	7	3	802	243	34	20	360	136	64	31	25	51	26	36	79	61	54	56	99	6	2	13	400	173	231	265	30	30	
Enteritis, Peritonitis, Gastritis.....	362	173	189	....	172	1	...	119	44	7	3	39	8	3	4	2	11	13	12	22	19	14	10	12	2	...	1	1	41	21	43	62	6	6
Hæus, Hernia.....	61	40	21	....	189	...	...	93	80	14	2	20	11	2	1	2	13	11	18	34	35	10	9	22	...	...	1	31	37	56	61	4	4	
Diseases of Liver.....	69	41	28	....	40	...	...	19	16	3	2	5	1	...	1	...	...	...	...	7	3	5	4	6	1	....	...	6	1	9	22	2	2	
					21	...	...	8	10	3	...	1	...	...	...	...	...	...	...	1	8	3	1	5	1	....	...	...	1	3	7	9	1	1
					41	...	...	15	23	...	3	2	1	...	...	...	...	...	...	...	6	6	6	10	10	...	...	3	...	9	28	1	1	
					27	1	...	5	18	5	...	...	1	...	...	...	...	...	...	3	3	11	5	5	...	...	...	1	2	11	14	...	...	
	492	254	238	....	233	1	...	153	83	10	8	46	10	3	5	2	12	13	13	35	33	25	24	28	3	1	1	50	22	61	112	9	9	
					237	1	...	106	108	22	2	21	11	3	1	2	13	12	19	45	41	22	19	28	...	...	1	33	42	74	84	5	5	
TOTAL DISEASES OF DIGESTIVE SYSTEM....	492	254	238	....	490	2	...	259	191	32	10	67	21	6	6	4	25	25	32	80	74	47	43	56	3	1	2	83	64	135	196	14	14	
TOTAL DISEASES OF GLANDS.....	2	...	2	....	2	...	...	2	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	...	1	....	1	....	....	....	
Diseases of Urinary Organs.....	145	84	61	....	84	...	...	27	43	7	7	3	2	2	...	...	3	1	3	11	13	14	10	21	...	...	1	10	3	26	43	2	2	
					60	...	1	14	38	6	3	1	1	...	...	...	4	...	6	9	10	8	9	12	...	...	1	4	5	24	26	2	2</	

TABLE NO. XLII.—Concluded.

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CAUSE.	SEX.				COLOR.			SOCIAL STATE.				AGE.																NATIVITY.					
	Total.	Males.	Females.	Unknown.	White.	Colored.	Unknown.	Single.	Married.	Widowed.	Unknown.	Under 1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	5 to 10 yrs.	10 to 15 yrs.	15 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	Over 80 yrs.	Unknown.	City, Village or Township.	Other Min- nesota.	Other U. S.	Foreign.	Unknown.	
Sunstroke.....	12	11	1	....	11	1	....	3	7	1	....	1	....	....	....	....	1	....	1	3	2	....	3	1	....	....	....	1	10	....	....	....	....
Violent Deaths.....	509	409	98	2	405	2	2	239	121	19	30	19	3	8	11	6	19	24	33	90	60	45	42	16	13	20	27	35	95	179	45	3	
					97	1	2	57	29	8	4	15	4	8	5	2	4	7	3	15	9	11	5	3	4	2	1	27	18	23	27	3	
					416	2	2	242	128	20	30	19	3	8	11	6	19	25	33	91	63	47	42	19	14	20	52	38	96	189	45	3	
					98	1	2	58	29	8	4	16	4	8	5	2	4	7	3	15	9	11	5	3	4	2	1	28	18	23	27	3	
TOTAL VIOLENT DEATHS.....	521	420	99	2	514	3	4	301	157	28	35	35	7	16	16	8	23	32	36	106	72	58	47	22	18	2	23	81	56	119	216	49	1
Dropsy.....	66	26	40	....	26	....	....	7	15	3	1	1	....	....	....	1	3	....	1	2	2	5	7	5	....	....	....	2	2	6	16	1	1
Debility.....	70	26	44	....	26	....	....	11	11	4	1	....	1	....	....	....	2	....	1	3	3	5	13	10	1	1	....	2	1	7	29	1	1
					44	....	....	10	18	14	2	2	....	2	2	2	2	1	....	2	2	4	4	22	....	....	1	9	1	1	8	15	1
					159	2	....	101	45	3	9	32	23	9	7	6	3	4	5	12	6	15	14	19	....	....	6	56	26	15	56	8	8
Unknown and Unclassified.....	317	161	155	1	155	1	....	92	56	6	1	25	16	8	7	8	5	4	9	15	12	11	12	17	....	....	6	50	28	16	59	2	....
					211	2	....	122	71	9	11	34	23	10	8	7	8	5	5	15	12	20	26	44	....	....	6	58	29	29	87	10	....
					239	1	....	108	97	30	4	27	17	8	9	10	9	5	10	20	17	20	29	49	1	1	7	61	30	35	109	4	4
TOTAL ILL DEFINED AND NOT SPECIFIED CASES.....	453	213	239	1	451	2	....	231	168	39	15	62	40	18	17	17	17	10	15	35	29	40	55	93	1	1	13	119	60	64	196	14	....
Total Miasmatic Diseases.....	1396	750	645	1	1391	3	2	1256	106	10	24	149	160	135	117	90	265	115	92	152	67	25	10	11	....	....	8	548	306	249	254	39	....
Total Diarrheal Diseases.....	921	498	418	5	914	6	1	888	26	2	5	653	166	24	6	2	10	4	8	14	8	2	6	9	....	....	9	557	120	175	55	13	....
Total Venereal Diseases.....	8	6	2	....	8	....	....	7	....	....	1	6	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	3	....	3	1	1	....
Total Septic Diseases.....	277	72	205	....	275	2	....	66	194	10	7	24	5	4	....	....	1	5	11	100	61	42	14	6	....	....	4	30	30	72	136	9	....
Total Parasitic Diseases.....	2	1	1	....	2	....	....	2	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....
Total Dietetic Diseases.....	13	11	2	....	12	1	....	8	5	....	....	1	....	....	....	....	....	....	....	1	6	3	2	....	....	....	1	....	....	5	7	1	....
Total Constitutional Diseases.....	1279	621	658	....	1269	7	3	557	599	87	36	67	31	18	7	9	28	24	85	346	238	154	119	112	20	5	6	146	143	338	609	43	....
Total Developmental Diseases.....	2204	1234	936	34	2181	6	17	1473	303	397	31	1401	33	1	3	....	1	....	....	....	....	....	....	6	473	279	7	1208	146	326	495	29	....
Total Diseases of Nervous System.....	1178	678	500	....	1172	4	2	917	206	42	13	497	145	45	21	19	46	28	29	72	56	43	81	84	6	....	13	494	196	248	213	27	....
Total Diseases of Circulatory System.....	344	195	149	....	338	5	1	116	188	29	11	30	1	1	....	3	8	11	21	36	40	44	59	82	2	1	5	38	21	100	166	19	....
Total Diseases of Respiratory System.....	1099	621	478	....	1089	7	3	802	243	34	20	360	136	64	31	25	51	26	36	79	61	54	56	99	6	2	13	400	173	231	265	30	....
Total Diseases of Digestive System.....	492	254	238	....	490	2	....	259	191	32	10	67	21	6	6	4	25	25	32	80	74	47	43	56	3	1	2	83	64	135	196	14	....
Total Diseases of Urinary System.....	145	84	61	....	144	....	1	41	81	13	10	4	3	2	....	....	7	1	9	20	23	22	19	33	....	1	1	14	8	50	69	4	....
Total Diseases of Generative Organs.....	19	1	18	....	19	....	....	17	1	1	....	....	....	....	....	....	....	....	....	5	5	1	5	3	....	....	....	1	6	11	1	1	....
Total Diseases of Parturition.....	99	....	99	....	99	....	....	5	93	....	1	....	....	....	....	....	....	....	....	5	40	38	16	....	....	....	....	7	11	28	50	3	....
Total Diseases of Locomotor Organs.....	5	5	....	....	5	....	....	2	3	....	....	....	....	....	....	....	....	....	....	2	....	3	....	....	....	....	....	....	2	3	....	....	....
Total Violent Deaths.....	521	420	99	2	514	3	4	301	157	28	35	35	7	16	16	8	23	32	36	106	72	58	47	22	18	2	23	81	56	119	216	49	....
Total Ill-defined and unspecified causes.....	453	213	239	1	451	2	....	231	168	39	15	62	40	18	17	17	17	10	15	35	29	40	55	93	1	1	13	119	60	64	196	14	....
GRAND TOTAL.....	10455	5664	4748	43	10373	48	34	6931	2570	724	220	3348	748	334	224	177	482	291	379	1090	778	551	511	616	529	292	105	3731	1335	2151	2942	296	....

\* Unknown sex.

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---

THE OFFICIAL PUBLICATION OF

THE MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS.

---

EDITED BY

CHARLES N. HEWITT, M. D.,

*Secretary and Executive Officer of the Board.*

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# PUBLIC HEALTH IN MINNESOTA.

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CONFERENCE OF STATE AND LOCAL BOARDS OF HEALTH AT ST. PAUL.—  
In accordance with the request of a number of the representative, and active Health Officers of the State, herewith published, a conference, as above, will be held at the Capital as early in February as can be arranged. We had intended calling the conference, as necessary to our mutual work, but are very glad that the request has come in this form, as indicating the lively interest felt by the sanitary executive officers of the State, in every detail of our common duty. It is also a pleasure to know that the plan, upon which the other conferences have been held, meets with such general approval, because it does away with the chief obstacles to the success of such meetings, and leaves the way clear for the real work in hand,—mutual conference as to the difficulties and trials incidental to public sanitary effort, and the best methods of meeting or preventing them. It is expected that prominent citizens interested in public health, will speak on one of the evenings, and the Secretary will be prepared to demonstrate methods of water, milk, kerosene, and other analyses, if such is the wish of the conference, and time allows.

We call attention to the matter now, that all Boards of Health may have due notice, and be prepared to send at least one delegate. If all did so, the conference would have more than one thousand members. That is hardly to be expected, and yet we trust all who can possibly do so, will be represented.

Reduced fares are expected on the railroads, and every other arrangement possible will be made, to make attendance on the conference as pleasurable, as as it will be profitable.

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BIENNIAL REPORT OF THIS BOARD.—With the January number we shall publish a statement of the work of Local and State Boards to December 1, 1886, and bring the statement as to pleuro-pneumonia of cattle up to January 3, 1887. This, with the index to this journal, issued with our last number, will enable all interested, to form a very fair notion of the amount, character, and results of public sanitary work in Minnesota, during the two years just passed. We feel sure that all who have helped in this work, will find abundant cause for congratulation in the results of our mutual efforts, and begin the new year well to the front in the advance "all along the line," which has already begun.



**L**EPROSY IN MINNESOTA.—We present to our readers, in this number, Dr. Gronvold's biennial report, a very encouraging statement for all who have feared that this disease was being transplanted from Norway by immigrants, or that it would spread among Norwegians here. No such immigration is taking place to Minnesota, and the number of cases, here, is decreasing. But four cases are known to be in the State, three of whom have the disease in the mildest and least dangerous form. Dr. Gronvold began the study of leprosy with Dr. Boeck, in this State, in 1869, and has served as a committee of this Board on the subject since. He has appended to his report a very interesting review of the history of leprosy in the Sandwich Islands, which all should read who wish to know the latest theories of the origin, and spread, of this mysterious affection.

**V**ITAL STATISTICS.—A review of what we are able to offer in this number shows their value and importance, and indicates the necessity for such a revision of the methods of collecting these facts, as shall make them constantly available for the information and use of Local Boards, and the State Board.

**G**LANDERS.—We again call the attention of Local Boards and Health Officers to the necessity of looking up promptly, all reasonable reports of the existence of this disease. To do this, it is not always necessary to call a veterinary surgeon. Our circular on the subject instructs any intelligent horse owner how to recognize the advanced stages of the disease. If you find enlarged and fixed glands under the jaw, with glue-like discharge from one or both nostrils, and the horse out of condition, the case is very suspicious. If there are, beside, well-marked ulcers in the nose, it is nearly certain. In both cases, call a veterinary surgeon.

If the cases have a discharge from the nose of long standing, no enlarged glands under the jaw, and the animal out of condition, isolate in care and at expense of owner, for thirty or forty days, if so long a time is needed, to decide the case. Such horses may be worked on the farm at owner's risk, but not where other than his own animals are exposed, till a competent veterinarian has given a written opinion that the disease is not glanders.

The owner may employ the veterinarian at his own expense, and if the Board have confidence in his opinion, given in writing on the customary blank, it may proceed in accordance therewith, to discharge, isolate, or slaughter, as the case may require. It is only in this way that the disease can be "stamped out."

HEALTH DEPARTMENT,  
NORTHFIELD, MINN., Jan. 13, 1887. }

*Dear Doctor:*—The following Health Officers heartily unite with me in a request to the State Board of Health, to hold a conference of Local Boards at St. Paul, the latter part of this month or first of next: Dr. E. W. Cross, Rochester; Dr. E. S. Frost, Willmar; Dr. C. F. Warner, Mankato; Dr. J. L. Camp, Brainerd; Dr. A. M. Stinchfield, Eyota; Dr. C. N. Clark, St. Charles; Dr. G. H. Overholt, Kenyon; Dr. A. W. Giddings, Anoka; Dr. G. W. McIntyre, St. Peter; Dr. H. O. Smith, Shakopee; Dr. Brewer Mattocks, Faribault; Dr. A. M. Adsit, Hastings; Dr. O. H. Hall, Zumbrota; Dr. E. D. Abell, Farmington; Dr. A. T. Conley, Cannon Falls; Dr. J. A. Garver, Dodge Center; Dr. A. O. Gilman, St. Cloud; Dr. B. J. Merrill, Stillwater; Dr. H. M. Workman, Tracy. If our request is considered feasible, would suggest that the conference be organized and conducted upon the same plan as those of the past, which were so successful. In this manner we can devote the whole time to the consideration and discussion of practical, every day work of the Local Boards.

I am satisfied by the prompt answers of the above Health Officers, and the tone of their letters, that, had a general expression of opinion been called for, there would have been a unanimous response in favor of the conference.

Dr. Hewitt.

Very respectfully,

W. A. HUNT, H. O.



## VITAL STATISTICS.

They are of scarlatina, diphtheria, small pox, croup and laryngitis, taken from the reports of Health Officers, and tabulated by the Secretary, with correspondence relating to the same. Attention is called to the marked coincidence of croup and laryngitis with diphtheria in Minneapolis, and the alternation of diphtheria and scarlatina, in Stillwater, as noted by the Health Officers of those cities.

We have to thank Dr. Quinby, H. O., of Minneapolis; Dr. Jones, H. O., of St. Paul; Dr. Merrill, H. O., of Stillwater, and Dr. Staples, H. O., of Winona, for the data as to our larger centers of population, and the Health Officers, whose names are appended thereto, for the data as to the rest of the state.

C. N. H.

HEALTH DEPARTMENT, }  
MINNEAPOLIS, Minn., December 18, 1886. }

*Dear Sir:*—Your favor of 16th inst. at hand. In reply would state that there have been reported at this office from August 1st, 1884, to December 1st, 1886, inclusive, the following cases of contagious disease:

Diphtheria .....	789
Scarlet fever .....	472
Small pox .....	2
Glanders .....	1

The following deaths have taken place from the above diseases during the dates heretofore mentioned, viz.:

From diphtheria .....	275
From scarlet fever .....	76
From glanders .....	1

One case of small pox reported proved to be varicella; the other was genuine. Was removed to pest house and recovered. No other cases resulted therefrom. The case of glanders in man died.

To DR. HEWITT.

THOS. F. QUINBY,  
Health Officer.

HEALTH DEPARTMENT, }  
STILLWATER, Dec. 22, 1886. }

*Dear Sir:* Inclosed you will find total cases of scarlet fever and diphtheria reported to me as Health Officer, from August 1, 1884, to December 22, 1886, and occurring within the limits of Stillwater City; also the total number of deaths resulting from the above diseases during the same period, and extending over the same territory. The record is, I think, very accurate, as the medical profession of this city report such cases readily and promptly, and are very conscientious as to the proper isolation and quarantine of the same. There is

but little comment to be made upon the record. Perhaps the alternation of the two diseases, as exhibited by the record, would be fitting matter for curiosity and speculation; whether or not *materies morbi* finding expression in these two contagious diseases be not in some manner related to each other or identical, simply attacking primarily different mucous membranes or tissues; thus giving rise to varied clinical symptoms as in the numerous methods by which epidemic influenza attacks the system. It will be noticed that in the latter part of 1884, diphtheria was in the majority. It had been present in the city for some years, and no scarlet fever. Scarlet fever appeared first in September, 1884, and the cases multiplied from then on, reaching their maximum from May, 1885, to September, 1886, diphtheria, meanwhile, declining both in number of cases and in severity and death rate. While scarlet fever increased in severity and death rate—during several months one-fourth and one-third of the cases resulting in death. Finally scarlet fever suddenly declined in September, 1886, and in October, 1886, there was a sudden outbreak of diphtheria with about a twenty-five per cent. death rate. It would seem as though there was some relation of cause and effect in this symmetrical alternation.

Very truly yours,

B. J. MERRILL.

To DR. HEWITT.

Health Officer.

Table I—SCARLATINA.

COUNTY	LOCALITY	Aug.1'84 to Aug.1'85		Aug.1'85 to Aug.1'86		Aug.1'86 to Dec.1'86		NAME OF REPORTER
		Cases	Deaths	Cases	Deaths	Cases	Deaths	
Polk .....	Garfield tp. ....	2	.....	14	1	.....	.....	Dr. A. Nelson, H. O.
	Liberty tp. ....			2				Dr. A. Nelson, H. O.
	Crookston.....					11		Dr. C. E. Dampier, H. O.
Goodhue.....	Cannon Falls.....			1				Dr. A. T. Conley, H. O.
	Red Wing .....	8	.....	31				Dr. B. Jehnig, H. O.
Nicollet .....	Kenyon .....					1		Dr. G. H. Overholt, H. O.
	St. Peter .....					7		Dr. G. W. McIntyre, H. O.
Rice .....	Traverse tp. ....					2		M. Tyler, Ch. B. of S.
St. Louis .....	No thfield.....			4				Dr. W. A. Hunt, H. O.
	Duluth .....			1	1			Dr. F. O. Sherwin, H. O.
Lyon .....	Tower .....			7	1			Dr. I. Van Dusen, H. O.
	Tracy .....	3	.....	12	3	4	.....	{ Dr. H. M. Workman, H. O.
Ameret tp. ....	{ Dr. C. M. Ferro, H. O.							
Mower .....	Grand Meadow tp. ....			1		1	1	Dr. C. M. Ferro.
	austin.....			24	3			A. D. Moore, Township Clerk.
Clay .....	Glyndon .....			2				Dr. Thos. Phillips, H. O.
	Moland tp. ....			1				W. H. Bangs, Jr., Secy. L. B. of H.
Waseca .....	Waseca .....							G. B. Gunderson, Tp. Clerk,
Dakota.....	Farmington .....					2		Dr. M. V. Hunt, H. O.
Crow Wing.....	Brainerd .....	2	.....	34	3	5		Dr. E. D. Abell, H. O.
Blue Earth .....	Mankato .....							Dr. J. L. Camp, H. O.
Steele.....	Owatonna .....			5	5			Dr. C. F. Warner, H. O.
Scott .....	Shakopee .....					7	4	Dr. E. M. Morehouse, H. O.
Carver .....	Waconia .....			1				Dr. H. O. Smith, H. O.
Hennepin .....	Maple Grove tp. ....			4				Dr. H. R. Diessner, H. O.
Norman .....	Sundal tp. ....			2				Wm. E. Evans, Ch. B. of S.
Anoka .....	Anoka .....			15				J. Holten, Township Clerk.
Otter Tail .....	Fergus Falls.....			28	6			Dr. A. W. Giddings, H. O.
Freeborn .....	Albert Lea.....			13	2			Dr. B. F. Mott, H. O.
Dodge .....	Milton tp. ....	2	1					Dr. H. H. Wilcox, H. O.
Washington .....	So. Stillwater.....			14	2			Dr. Chas. Hill, H. O.
Stevens .....	Rendsville tp. ....			1				Dr. E. Cooley, H. O.
Renville .....	Olivia .....					5		A. Young, Township Clerk.
Cottonwood .....	Dale tp. ....			15	7			Dr. F. L. Puffer, H. O.
Olmsted .....	Quincy tp. ....			2				D. Cook, Township Clerk.
Big Stone .....	Ortonville.....	5						Dr. J. W. Scott.
Brown.....	Sleepy Eye .....	8	.....	2	.....		.....	Dr. L. C. Lane, H. O.
								{ Dr. J. W. B. Welcome, H. O.
Sherburne.....	Santiago tp. ....		.....	2	1		.....	{ Dr. H. Wechsler, H. O.
								{ F. S. Rolph, Township Clerk.
Total.....		30	1	238	35	45	5	

## No. III.

### LEPROSY IN MINNESOTA, 1884-86. (*Elephantiasis Græcorum.*)

*The report of the standing committee of the State Board of Health on that subject, Chr. Gronvold, M. D., Chairman, with an appendix reviewing the report of the Board of Health of the Kingdom of Hawaii, for 1886.*

THE number of lepers on record in Minnesota, at the end of 1886, is something less than was reported at the beginning of 1884. The figures are of course subject to some uncertainty, as there may, and probably do, exist cases not known or reported, because milder and less conspicuous.

In the course of the last two years, two new cases have been added to the list; but one of them, a man, reported by Dr. Caine of Stillwater, died this year, thirty-two years old, after having suffered from the anæsthetic form of leprosy for ten years, and lived in this country seventeen years. The other case, a man, at present thirty-seven years old, has had the disease in its anæsthetic form eight years, and lived in this country seven; in Minnesota one. One case more, a man forty-six years of age, has been reported as suffering from the anæsthetic form of the disease for the last three years, and having lived in this country twenty-six years; but as his whereabouts and other circumstances of the case, in spite of extended inquiries, have not been ascertained, he is not put on the list.

Of the six lepers reported as living in the beginning of 1884, three have died since, Nos. I., III. and VI., while in the other three the disease has been progressing. No. I., a male, died in 1885, at the age of sixty, having had the disease in its anæsthetic form twenty years, and lived in this country twenty-nine years. He was the last of the cases, Prof. Wm. Boeck saw here. No. III., a female, died in 1885, thirty-one years old, for nine years a leper of the tubercular form, eighteen years in this country. No. VI., a male, died in 1884, at the age of forty-five years, eleven years a leper, anæsthetic, sixteen years in this country.

The list of lepers, known at present as living in Minnesota, is consequently:

No.	Old No.	Sex.	Age in 1886	How long leprous.	How long in this country.	Form of the disease.	Leperous relations.	Present state of disease.
1	II.	Male	32 years	10 years	23 years	Tubercular	Father & 2 bros	Progressing.
2	IV.	Male	38 "	19 "	15 "	Anæsthetic	.....	Progressing.
3	V.	Male	70 "	14 "	20 "	Anæsthetic	.....	Progressing.
4	New	Male	37 "	8 "	7 "	Anæsthetic	Father.	Progressing.

The list of lepers, who are known to have died in Minnesota since 1876, is increased by four since last report in 1884, and comprises at present eleven cases.

No. while liv'g	No.	Sex.	Year of death	Age at time of death.	How long leper.	How long in this country	Form of disease.	Leprous relations.
.....	1	Male	1880	49 years	24	19 years	Anæsthetic	Bro. of mother's father.
.....	2	Male	1878	56 "	14	24 "	Tubercular	A cousin.
.....	3	Male	1878	35 "	10	9 "	Anæsthetic	Father's brother.
.....	4	Male	1876	30 "	3	13 "	Tubercular	Father.
.....	5	Male	1878	30 "	12	15 "	Tubercular	Father and brothers.
.....	6	Male	1877	62 "	30	21 "	Tubercular 7 yrs; afterwards anæsthetic	Brother and father's bro.
.....	7	Male	1878	30 "	10	10 "	Anæsthetic	Mother's brother.
I.	8	Male	1885	60 "	20	29 "	Anæsthetic	Father, father's sister, brother, sister, cousins.
III.	9	fem'le	1885	31 "	9	18 "	Tubercular	
VI.	10	Male	1894	45 "	11	16 "	Anæsthetic	Brother.
	11	Male	1893	33 "	10	17 "	Anæsthetic	

The last case is that reported by Dr. Caine of Stillwater, a year ago, as follows, an instance of the anæsthetic form of the disease:

"He came to America sixteen or seventeen years ago. About nine years ago, while employed on the drive somewhere in Wisconsin, he first noticed the difficulty appearing, he said, as a swelling, then partial anæsthesia; finally, after the hypertrophied condition of the foot had gotten to its limit, it burst open (as he expressed it), on the plantar surface, exposing the metatarsal bones, emitting a very sickening odor, and portions of the bone exfoliating. This condition of affairs continued until April, 1881, at which time he applied to me for treatment, desiring me to remove the diseased bones. The derma was very much thickened and of a very pale hue, and of almost a cartilaginous feeling, and quite resistant to the knife, no pain being felt while enlarging the opening.

"I explored and found the lower articular surface of the tibia and fibula involved, and advised amputation, which was consented to by the patient.

"The following day, April 30, 1881, I amputated the lower third, making a posterior flap operation, which healed very kindly. There was an excess of fibrine in blood, which coagulated almost immediately on exposure to the air.

"About three months after amputation of the leg, he again came to me to have a finger amputated, which had gone through the same process as had the foot, the end of that phalange being ulcerated, the bone protruding and emitting a very bad stench. I removed the finger, and since that time have, in all, removed seven fingers without anæsthetics being required, the parts being devoid of sensation. I have also amputated the big toe of his remaining foot, which presented precisely the same appearance, and went through the same changes as did the fingers. This foot is diseased in the region of the heel; but I have not seen the patient for some time.

"The patient's skin is dry and husky, and about the hands presents a very wrinkled appearance, as did also the face at times. His hair is very dry and bushy, not having the natural oily and lifelike appearance. Appetite, good; bowels, regular; and, with the exception of these ulcers, which appear on the joints of the fingers and toes, he says he feels quite well."

The average duration of life after having acquired leprosy, is, for the six cases, who died anæsthetic,  $17\frac{1}{2}$  years; in the four tubercular cases, the disease lasted an average of 9 years.

Comparing these figures with the corresponding figures in the report from the Sandwich Islands, the difference in the violence of the disease will be conspicuous.

As the disease in Minnesota, so far as the short experience goes, does not seem to be easily communicated, it will be interesting to give attention to the constitutional peculiarities, if any, which the inherited predisposition may possibly develop in the offspring of lepers, in case that it does not give rise to the leprosy itself. Some cases in this direction have been noted. One, a girl seventeen years old, granddaughter of a leper, of a family in which many members were lepers, has, since she was nine or ten years old, every fall had fever and chills, headache, neuralgic pains in different parts of the body, especially on the ulnar side of the arms and peroneal side of the legs, exzema for a



week or two on different parts of the body (last time especially in the groins and on the knees), dyspepsia and bad breath. These symptoms may be prodromes, to be followed by leprosy, but so far there has been no lasting change in the condition of her health.

This case seems to resemble the cases which Dr. Arning calls "abortive leprosy," where only *some* symptoms of the disease are developed.

#### LEPROSY IN THE SANDWICH ISLANDS.

- I. *Report of the President of the Board of Health to the Legislative Assembly of 1886.*
- II. *Leprosy—Report of the President of the Board of Health to the Legislative Assembly of 1886.*
- III. *Appendix to the Report on Leprosy of the President of the Board of Health to the Legislative Assembly of 1886.*
- IV. *Leprosy in Hawaii—Extracts from reports of Presidents of the Board of Health, Government Physicians and others, and from Official Records—The Laws and Regulations in Regard to Leprosy in the Hawaiian Kingdom, 1886.*
- V. *Leprosy in Foreign Countries—Summary of Reports Furnished by Foreign Governments to His Hawaiian Majesty's Authorities, as to the Prevalence of Leprosy in India and other Countries, and the measures adopted for the Social and Medical Treatment of Persons Afflicted with the Disease.*

THE Sandwich Islands have, of late years, had a terrible visitation, that, together with other causes, threatens to blot the little nation out of existence. These beautiful islands with their delightful climate—the range of Honolulu is between 88° and 58°—have been attacked by leprosy, this mysterious disease, that has been known for more than four thousand years, and of whose prevention and cure we at present know about as much, as was known at that time, it being yet considered incurable, and segregation proving the only efficient way of prevention.

The first case of leprosy, that was recognized as such by a professional man (Dr. Hillebrand), dates from 1853, and as it was then unknown to the native Hawaiian, but familiar to the immigrated Chinese, who knew it from their old home, it was called the Chinese disease (Mouritz, Meyer). It had probably existed for some time before, but been diagnosed as syphilis, with which the greater part of the nation had been infected since the arrival of Cook, and the opening of intercourse with other people. In 1840 the disease was recognized in Honolulu by Mr. Brickwood, who had previous knowledge of it in Egypt. And yet earlier, in 1823, there seem to have been allusions made to it in the day-book of one of the American Missionaries, Rev. Charles Sam Stewart, who that year landed in Honolulu.

The way in which leprosy was introduced to these islands, as well as the date, has occasioned a variety of opinions. *President Gibson* believes, that the disease had been "dormant in the Hawaiian blood" since the days of the settlement of the islands, 1100 years ago, by emigrants from the Indian Archipelago, the disease probably appearing now and then in individual cases, in a greater or less degree. The present inhabitants of Java and adjacent islands present striking affinity with the Hawaijans, and are afflicted with the same diseases. The deterioration of the Hawaiian people by the invasion of syphilis and other diseases, prepared the soil for leprosy, and its unprecedentedly rapid spread, one cachexia making the system less able to resist the other.

It seems reasonable, with Meyer, and others, to suppose that the disease has been imported by the mixed crews of whale ships, which consisted of colored and white, Chinese and Portugese, and others from countries, where the disease is endemic.

The sudden spread of the disease seems only capable of explanation by



supposing it to be contagious; and that it is so, is the unanimous opinion of physicians and others, who have studied the disease at the place.

Contagiosity being admitted, its sudden spread and virulent character are only, new illustrations of the old rule, that a disease is most violent when it first attacks a nation, especially if this is small and so perfectly isolated, as the Hawaiians were. This luxurious climate and soil also invite to indolence and carelessness in precautions, as well as lessen the power of resistance.

This nation was, moreover, already weakened and demoralized by the invasion of syphilis, small pox, and other evils, attendant upon civilization. Syphilis, in its different stages, has been supposed to have infected four-fifths of the native population; and this disease is, by some, supposed especially to dispose to leprosy. It is also observed, that leprosy is more frequent in places where immorality is greatest—(Hutchinson).

To give an idea of the state of affairs in this respect, about sixty years ago, we will see what the Rev. Chas. Sam Stewart writes in his day-book in 1823: "Not to mention the frequent and hideous mark of a scourge, which annually consigns hundreds of this people to the tomb, and converts thousands, while living, into walking sepulchres. The inhabitants generally are subject to many disorders of the skin. The majority is more or less disfigured by eruptions and sores, and many as unsightly as lepers. The number of either sex or of any age, who are free from blemishes of this kind, is very small, so much so, that a smooth and unbroken skin is far more uncommon here than the reverse is, at home" —(Dr. Mouritz's report).

In another place he writes: "Indeed we seldom walk out without meeting many, whose appearance of misery and disease is appalling, and some so remediless and disgusting, that we are compelled to close our eyes against a sight that fills us with horror. Cases of ophthalmic scrofula and elephantiasis are very common." As elephantiasis arabum is not found on the islands, it must be *e. grecorum*, he refers to.

The following figures will also show what havoc the contact of civilization has worked on this people: In Cook's time, a little more than 100 years ago, the number of inhabitants on the islands was calculated to be about 500,000; fifty years later it was 142,000, hardly one-third; In 1853, 73,000; in 1886, 40,000 was all that was left of the Hawaiian race, while immigrated Chinese and some white people swell the number to 75,000 as the present population.

The warm, and, on the windside, moist temperature of the country, favors the development of leprosy, as a disease principally of the tropics and seacoasts, while it is only exceptionally found at present in colder climates. In China the northern part is said, by the Chinese, to be exempt from the disease (Hillebrand's report), and southern lepers going north, are said to improve, but get worse again, when returning south. More than anything else the habits of the people, and their promiscuous intercourse, promote the spread of this disease. They are most hospitable, and receive strangers without any precautions against disease. "The lepers are welcomed in their midst with open arms" (Mouritz); they don't seem to find the disease loathsome, and whole families are infected.

The present number of lepers on the islands in and outside of the hospitals, is supposed to be about 1,500, or two per cent of the whole population. Among 3,076 lepers received at the leper settlement at Molokai, since its opening in 1866, 22 were Chinese, and 16 whites, to wit: 6 Germans, of whom 3 are alive; 4 Americans, 2 alive; 4 British, 2 alive; 1 Pole, alive; and 1 Portuguese, dead; leaving 8 white lepers alive February, 1886. Of Chinese, there are proportionally few, considering that they make the bulk of the immigrants.

If ignorance and carelessness have brought this pestilence upon the people, it has manfully stood up to the emergency as soon as it saw the danger. In 1865 a law was passed "To prevent the spread of leprosy," etc., that enforces isolation of lepers. There is established a Board of Health with authority to carry out the provisions of the law. Physicians, subject to the order of the Board, are distributed over the islands for gratuitous treatment of all Hawaiians (in the report for 1886, there are named twenty-eight, of whom fifteen did

service at the same time). For sanitary purposes (hospitals, quarantine, salary of physicians, etc.), was expended in the last two years, \$264,500, or about one-tenth of the whole revenue of the kingdom.

The Government physicians send biennial reports of their doings and observations to the President of the Board. Among them those of Drs. Arning and Mouritz are especially complete and interesting.

One of the principal points to be decided, and that one of great practical bearing, is the question of contagiosity. All physicians, and others, whose calling has given them the opportunity of making observations, agree that the disease is contagious (with one single exception, Dr. Fitch, who considers it a fourth stage of syphilis).

"The whole history of leprosy in the Hawaiian Islands, from its propagation to its present rapid spread and development, verily proves, that it can only be accounted for by regarding it as a contagious disease. Whatever else can be said of its being non-contagious in other countries, where the disease exists endemically, these statements do not apply to the disease in the Hawaiian Islands."—(Mouritz.) "It is simply the extreme slowness of its action and development, the apparent immunity from it, which so many seem to possess, and the imperceptible manner of its communication, which could have led to the conclusion, that the disease is non-contagious."—(Meyer, agent Board of Health, who has lived on the islands for thirty-six years.)

Dr. Mouritz gives the following reasons for declaring the disease contagious:

"1. *Hereditary disposition cannot explain* all the cases on the islands, as the Hawaiians are not a prolific race, and as among lepers sterility is the rule. Also most of the offspring of lepers are stillborn, or die within a short period after birth. There were, January 1, 1886, 653 lepers in the settlement, and in the last fifteen months five children have been born, of whom two are alive; and it is doubtful whether these will reach maturity, and even then they may illustrate the law of atavism.

"2. *If no hereditary history is obtainable*, facts can invariably be elicited, that contact with lepers, for long or short time, has existed.

"3. Foreigners from countries where the disease is unknown, and who have not before been in contact with lepers, have, after settling on the islands, become victims of the disease, among them the Rev. Father Damien.

"The Rev. Father Damien, a Belgian, came to the settlement of lepers in 1873. He was then thirty-three years old and of good physique, enjoying a robust, good health, and has since lived there continuously, being daily and hourly in contact with lepers of every grade. Until in 1884, he felt fairly well. In that year pains in his left foot troubled him; they continued to get worse, and were, in the absence of other signs referred to rheumatism. Consulting Dr. Arning, this gentleman diagnosed it as leprosy, the symptoms pointing to deposits of leprosy matter in the structures connected with the peroneal nerve in the flexure of the knee. Eight months afterwards a small leprosy tubercle manifested itself on the lobe of the right ear. From that time diminution and loss of eyebrows, infiltration of integuments on forehead and chin, are slowly but certainly going on, and he is a present a confirmed leper.

"That there are people who possess immunity from leprosy, and for years may live with lepers without being infected, is not more than is often the case with other infectious diseases. Not everybody will catch it, but many do. In the last twelve months, seventeen Kokuas (healthy people, that do work in the leper settlement) out of 178 have developed leprosy, about 9.5 per cent. At that rate they would all be infected in twenty years, if they do not possess immunity."

Dr. Arning, an able German scientist, was called to the islands in 1883, to study the disease at the place, and investigate the causes of its sudden spread. He has given a statement of his clinical and anatomical researches in his biennial report for 1884-86.

I. A number of lepers were examined by him as to the *presence or absence of leper bacillus*, and he summarizes his results as follows:

1. *In the tubercular cases* the bacillus is found in all nodules and diffused infiltrations, whether on the skin or on the mucous membranes of mouth, throat, nose, rectum, and large intestines; in the softening and breaking down of these nodules, the bacteria are plentifully mixed with the discharge.

2. *In the anæsthetic cases* the bacillus is *not* found in the patches, nor in the necrotic parts of the skin, tissue or bone, *but* in the nerves supplying these mutilated parts with vitality. In the leprosy ulcerations of the nose, that sometimes occur in these cases (Boeck, Danielson), the bacillus is found.

3. The bacillus is *not* found in the *bright, red patches*, frequently ushering in the first attack, and mostly occurring in the face, depending upon leprosy disease of the nerve, supplying the part.

4. *Neither in the urine*, which the Chinese consider the worst infection carrier.

5. *Neither in the blood.* For all that, the germ may be contained in the blood, more especially during the febrile attacks, possibly in some hitherto unknown, but suspected form of spore condition, a stage of the life of a bacillus. These suspected spores may be invisible, either on account of their minuteness or on account of our inability to make them visible by the staining methods we use in searching for bacteria.

II. As regards the *anatomical work* of Dr. Arning, he found in all advanced cases, grave changes in the larger viscera, more especially in the lungs, liver, spleen and bowels. The ulcerations of the bowels and the breaking down of lung-tissue are due to leprosy infiltration, and we shall have to modify our opinions of leprosy as being mainly a disease of the cutis and peripheral nerves, and *introduce terms such as phthisis leprosa, and enteritis leprosa.*

*Brain and spinal cord* he found unaffected, but they will yet need a very close and searching microscopical scrutiny, as all the material collected.

III. The question of the *etiology of leprosy, the bacterial research*, was another important part of Dr. Arning's investigations.

1. *Culture experiments of the bacillus* in artificial soil (gelatines, bouillon, etc.) have so far given negative results, as has also the search for the bacillus in air, water or food.

2. *Neither did inoculations in a variety of animals*, guinea pigs, hogs, pigeons, rabbits, rats, and a monkey, give any positive result. For months the presence of the bacillus could be followed up at the spot of inoculation; but not in any single instance have the general symptoms of leprosy been observed.

*Inoculation on a condemned convict* has not yet (fourteen months later) given any results, although the bacillus all the time could be traced at the place inoculated. How long the period of incubation may be, Dr. Hillebrand's case from Borneo will show. A white boy played with a colored leprosy child, who thrust a knife into the anæsthetic part of the body, and, for imitation's sake, the white boy did the same on his body with the same knife. After this he left for Europe, where he grew to maturity, and nineteen years afterward he developed the disease and became a confirmed leper.

Dr. Arning sums up his conclusions as follows: "(1) The bacillus lepræ is a parasite, limited to the human race. (2) It may be transmitted either directly from an individual, (3) or run through a term of intermediate life (spore condition), which we are at present unable to detect, but which may be present in soil, water or food, whereto it can only be carried from diseased tissue of a leper. (4) Accepting either theory, the direct or indirect transmission, *we must look upon every individual leper, whether in the incipient or advanced stage of the disease, as a dangerous focus of the malady*, he multiplying and nursing the germ in his tissues. (5) *The leper germ requires a certain disposition of the human soil, to strike and thrive.* What this peculiar disposition may be, we are at present unable to define. It is evidently a disposition which may co-exist with apparently good health, as is shown by many instances of strong, robust men developing the disease. This disposition may possibly be transmitted by heredity."

*Contagion* is then considered the principal way of originating the disease,



and Dr. Mouritz puts this as the cause of it for seventy-six per cent of all the lepers:

I. *Contagion may enter the system* (Dr. Mouritz) *by inoculation*.—(a) At broken surfaces of the skin or external mucus membranes; sexual intercourse seems to give a chance for inoculation, at least, when there are sores and abrasions at the place of contact. Many such cases are told as the following: A man after direct contact with a female, became aware of a small sore on a certain part of his body. This was treated as syphilis, without improvement. Later on, spots appeared, eyebrows diminished, and he was declared a leper.

Dr. Peters, in India, has made observations in a similar direction. After, accidental cutting, or abrasion of epidermis, or after walking on a gravelly road the abrasions became the starting points for leprosy sores.

(b) *Vaccination has undoubtedly originated leprosy cases*.—Dr. Mouritz supposes two per cent of all. Dr. Arning vaccinated a number of lepers, but the vaccination only took in three cases—one tubercular and two anæsthetic. In the tubercular, both the lymph and crust contained the bacillus lepræ; in the anæsthetic no bacillus could be detected.

(c) Dr. Arning is making investigations concerning the possibility of the *leprosy virus being conveyed by mosquitoes and other insects*. The elephantiasis arabum, endemic in some parts of the tropics, but unknown here, has been traced to propagation by mosquitoes, and by these only.

II. *Contagion may also enter the system by inhalation*, or inoculation of contagious particles, conveyed in the exhalations of the lepers, on internal surfaces, tonsils, bronchial surfaces, or they may be swallowed in the stomach. This is the most frequent way of propagation and is supposed to cover the Rev. Father Damien's case.

*Hereditary predisposition*, is, by Dr. Mouritz, ranked next to contagion, as the chief agent in causing the spread and perpetuation of the disease, as in leprosy the best exponent of predisposition is found. In twenty-eight per cent of the lepers this predisposition is supposed to have existed.

*The character of the disease seems of late years to have become milder*, according to the testimony of most reporters. As a common rule endemic and epidemic diseases will modify their character with time and circumstances, and milder forms will commonly follow the more malignant type. Dr. Hillebrand gave in 1865, the average duration of the disease as three to five years, while Arning, in 1884, puts five to ten years as the time, and at present there are many cases, where the disease has lasted longer.

Dr. Arning has, when examining for leprosy, met with several cases with only one or more symptoms of the disease; he calls them *abortive leprosy*, and hails them as signs of a decrease of the violence of the disease.

It has also been commonly observed that the tubercular form, although yet prevalent, more than three to two in the leper settlement (of 652 lepers, there are 333 tubercular, 204 anæsthetic; and the rest, 115, belong to the mixed form), is yet not so frequently met with now, as was the case before. It has decreased, compared to the anæsthetic form, which is the less active, and the least rapidly progressive.—(Dr. Mouritz.) "I may mention," the Doctor says, "that I have heard the opinion expressed by many able physicians of Europe, that in countries where leprosy has existed to a recent date, although now extinguished, various obscure nervous affections do occur from time to time, which probably are lingering relics of anæsthetic leprosy."

In China it is the opinion that the disease may run out, of itself, frequently in four generations.—(Dr. Hillebrand.)

*In regard to sex*, old and new statistics, go to show a prevalence of leprosy among the male sex, about as two to one. Out of 3,076 lepers received at the leper settlement, 1,972 were males, 1,104 females. Females are more apt to transmit the contagion than the male.

*Age* can be anywhere from childhood to old age. Dr. Arning has seen signs of leprosy in a boy three and one-half years old, and found a marked case at four years of age.

*For prevention of the disease* all recommend *rigid segregation* as the only

security. In Norway it is the transferring of lepers to hospitals that has worked the decrease of the number (Hanson), in ridding the country of so many centres of contagion.

It is necessary to *dispose of the dead bodies, houses and effects of lepers*. The houses of lepers and their contents have repeatedly proved to be a focus of infection, and ought, consequently to be burned, instead of being used again by healthy people.

*Arning considers a leper's body a constant menace* to the community. The bodies of dead lepers ought to be burned or disposed of by quicklime, as the germs of leprosy offer a great resistance to putrefaction. Leprous tissue and matter was set aside under conditions of temperature and moisture, most conducive to slow and thorough putrefaction, while the growth of the larger fungi was at the same time carefully excluded. Microscopical examination showed that the characteristic bacillus lepræ, not only held its own, but seemed actually to have increased. Examinations, eight months afterwards, of the remains of this leperous tissue, showed it to consist nearly entirely of swarms of the bacillus lepræ, closely packed, while every vestige of cellular and fibrous structure had disappeared; even the bacillus of putrefaction had crumbled up into a mass of detritus. In the body of a leper buried five months before, leperous germs were found in great numbers.

The question whether these bacilli are alive and capable of reproducing the disease, will only be solved when artificial cultivation of the germ and inoculation have been successfully carried out.

*Treatment of lepers* comprises principally hygienic measures. In anæsthetic cases, electricity will be of great benefit; for external use salicylic acid and gurgun oil to heal sores. Surgical interference, will, in many cases be most beneficial. Many eyes could be saved and life made more comfortable. Lepers stand surgical interference very well. Sores heal on them as on others.

Dr. Goto's treatment is favorably spoken of. It is that commonly used among the Japanese and other Asiatic races. As the *hygienic part*, baths were taken two or three times a day in water from 90° to 100°, medicated with a few ounces of infusion of the bark of *Æsculus turbinata* (a kind of horse-chestnut), with some sulphur and other ingredients, all to promote cleanliness, free perspiration, and activity of the pores of the skin, so as to get rid of unhealthy secretions. As the *diatetic part*, strong, nourishing food was given to build up the debilitated system: rice, milk, beef, mutton, chicken, eggs, broth, vegetables and fruit.

*The medical treatment* varies with the condition of the patient, the stage and character of the disease. The two chief medicines he calls "seiketen ren," internally, and "yoku-yaka," for bath, if anybody is wiser for knowing it. One of the other physicians has requested the Board to publish the medicines used, and not allow any arcana (secret remedies).

CH. GRONVOLD, M. D.



*Infectious Diseases of Animals. Official instructions to Local Boards of Health.*

## PLEURO-PNEUMONIA.

STATE BOARD OF HEALTH OF MINNESOTA, }  
SECRETARY'S OFFICE, }  
RED WING, January 12, 1887, }

*To Local Boards of Health:*

Complaint has been made to this Board that some Local Boards of Health are not looking after cattle imported into their districts from Cook County, Illinois, (which includes Chicago.)

This is a matter of too much consequence to be left in any doubt.

Local Boards *will be held to a strict accountability under the law*, Chapter 200, Laws of 1885, (reprinted in March No. of *Public Health in Minnesota*, for 1885.) Sections 1-9 define the duties of Local Boards, and of owners or, caretaker of cattle. This Board will come promptly to the aid of any Local Board when necessary; but we cannot relieve any Local Board of its responsibility or perform its duty, except such Board neglects, or refuses, to do it. The last number of *Public Health*, October, 1886, contains full description of the Pleuro-Pneumonia in Chicago and Cook County; of our danger therefrom; of the duty of Local Boards; and of buyers, and owners, of stock. This circular letter is supplemental to instructions heretofore issued, and will, it is hoped, be all that is necessary to secure, so far as this Board can, intelligent and prompt activity on the part of Local Boards, in dealing with this important matter. One charge against Township Boards is the uncertainty as to whom complaints and reports should be made, and the difficulty of finding the proper person promptly. Such Boards will remove this objection by stating, in all orders relating to matters of public health, to whom reports or replies are to be made, (giving name and address,) and they should so arrange as to make this duty as easy as possible, especially as respects infectious diseases of men or animals.

The Health officers or Local Boards of Health of villages, towns and cities can easily arrange through their sanitary inspectors or the police for the prompt receipt and attention to the notices hereafter called for. This method is self-evident, and is the only way the Local Board can learn, for itself, when and where such cattle arrive in its district; that they have been duly inspected in Chicago (see page 72 *Public Health*, October, 1886); that they are now apparently well; where they are to be taken; that they be isolated, when practicable, or necessary, for 30 days in care of the owner, as additional precaution, and that the Local Board be kept informed of their condition and whereabouts for that time. These facts are to be immediately reported to this office on inclosed blank.

The following notifications to be given, immediately, in writing.

1. Notify agents of all railroad stations in your district, to give your Board (as above specified) immediate notice (if possible in advance), of the receipt of cattle from Chicago, or other places in Cook County, Illinois, with name of consignee.

2. Give same direction to all dealers in, or buyers of, cattle, living in your district, and require, further, the same notice from them before unloading such cattle from cars, or driving them into your territory.

In all cases fill, and forward, inclosed blank to this office, and when in doubt, telegraph or write for instructions. Please acknowledge receipt of this letter by postal card, and on same, report that the notification to depot agents, and cattle dealers has been sent.

By order of State Board of Health,

CHARLES N. HEWITT,  
Secretary and Executive Officer.

*Form IX. Infectious diseases of animals. Importation from or through infected districts.*

## STATE BOARD OF HEALTH OF MINNESOTA.

**NOTE.** *This form to be filled and forwarded immediately, to this office, after an inspection of the cattle. If no sufficient certificate is brought, isolate cattle at expense of owner, till satisfactory evidence is furnished, and notify this Board of the facts in the case.*

C. N. HEWITT,  
Secretary and Executive Officer.

Address, Red Wing.

Statement as to importation of cattle from, or through, (name of place)  
..... County..... State....., by  
LOCAL BOARD OF HEALTH of (name of place).....  
..... Co., Reporter.....

There arrived here on (give date) ..... 188., ..... head  
of cattle belonging to ..... of .....  
..... Co. Said cattle left ..... Co. ....  
State..... on the ..... day of ..... 188.. They  
are (state apparent health) .....  
.....  
(give No.) ..... have been sick en route, Disease (name) .....  
..... died en route. Disease (name) .....  
.....

DESTINATION—They are to be taken to..... Co.....  
and are (state whether to be kept, or for sale) .....  
P. O. address of owner ..... or of  
care-taker (if not same person) ..... Their  
owner or care-taker has the certificate of (State official title) .....  
..... of .....

I certify that said cattle are well and free of all disease; that none have  
been sick or died en route, or been exposed to any infectious disease of animals.

(If the cattle came through Cook County, Ill.) I certify that said cattle  
were not unloaded or fed on feed purchased in Chicago, or in Cook County,  
Illinois, or in any way exposed to disease there, or since leaving there.

(To be signed by owner or care-taker) .....

P. O. address.....

Action of Local Board of Health respecting above described cattle.....

Dated this..... day of ..... 188..

(Official signature) .....

*Table II.—DIPHTHERIA.*

COUNTY	LOCALITY	Aug.1'84 to Aug.1'85		Aug.1'85 to Aug.1'86		Aug.1'86 to Dec.1'86		NAME OF REPORTER
		Cases	Deaths	Cases	Deaths	Cases	Deaths	
Carver.....	Hollywood tp.....	9	5	11	6	...	...	M. Burns, Ch. B. of S.
	Waconia.....	1	...	8	2	19	6	Dr. H. R. Diessner, H. O.
	Y. America.....	8	2	...	...	...	...	Dr. S. J. Meek, H. O.
	Chaska.....	...	...	...	1	...	...	Dr. P. F. Shillock, H. O.
	Laketown tp.....	...	...	6	2	...	...	Henry Reitz, Ch. B. of S.
	Watertown.....	...	...	1	1	...	...	Dr. J. H. Frank, H. O.
Chisago.....	North Branch tp....	...	...	2	1	...	...	J. Sedin, Ch. B. of S.
	Fish Lake tp.....	...	...	10	3	...	...	Dr. E. M. Beardsley.
	Shafer tp.....	...	...	7	1	...	...	J. W. Nelson, Ch. B. of S.
	Sunrise tp.....	...	...	1	1	...	...	E. E. Englin, Township Clerk.
Rice.....	Morristown.....	...	...	1	...	...	...	Dr. W. C. Gibson, H. O.
	Faribault*.....	...	...	28	1	...	...	Dr. A. C. Rogers, Supt.
	Webster tp.....	...	...	...	...	13	7	Thomas Skeffington, Tp. Clerk.
Wright.....	Stockholm.....	...	...	3	3	...	...	Dr. S. J. Wooster.
	Middleville tp.....	...	...	7	1	...	...	Dr. E. Y. Chilton.
	Cokato.....	...	...	...	...	1	...	A. P. Peterson, Mem. L.B. of H..
Polk.....	Garfield tp.....	...	...	2	2	...	...	Dr. A. Nelson, H. O.
	Woodside tp.....	...	...	6	1	...	...	Dr. A. Nelson, H. O.
	Crookston.....	...	...	1	...	3	1	Dr. C. E. Dampier, H. O.
Stearns.....	St. Cloud.....	...	...	...	...	2	1	Dr. A. O. Gilman, H. O.
	Munson tp.....	27	5	...	...	...	...	Dr. H. Schmidt.
	Eden Lake tp.....	10	1	...	...	...	...	Dr. H. Schmidt.
Goodhue.....	Red Wing.....	...	...	3	...	2	...	Dr. B. Jehnig, H. O.
	Cannon Falls.....	...	...	...	...	...	...	Dr. A. T. Conley, H. O.
	Warsaw tp.....	...	...	3	3	...	...	L. Huestis, Township Clerk.
Brown.....	New Ulm.....	...	...	6	4	...	...	Dr. J. Kaula, H. O.
	Sleepy Eye.....	...	...	2	1	3	1	Dr. H. Wechsler, H. O.
	Cottonwood tp....	...	...	7	1	...	...	J. Manderfeld, Ch. B. of S.
Anoka.....	Anoka.....	...	...	14	7	...	...	Dr. A. W. Giddings, H. O.
	Linwood tp.....	...	...	10	5	...	...	S. M. Sherman, Township Clerk.
McLeod.....	Winsted tp.....	2	...	...	...	...	...	J. P. Thompson.
	Hutchinson.....	...	...	13	12	...	...	Dr. K. Wakefield, H. O.
Rock.....	Lu Verne.....	...	...	21	3	...	...	Dr. A. E. Spalding, H. O.
	Magnolia tp.....	...	...	5	2	...	...	S. Young, Ch. B. of S.
Swift.....	Hegen tp.....	...	...	8	1	...	...	Dr. H. B. Harter.
	Kerkhoven.....	5	4	...	...	...	...	Dr. E. B. Crone, H. O.
Clay.....	Hawley.....	...	...	...	...	18	4	Dr. J. H. Carson, H. O.
	Glyndon.....	...	...	...	...	3	...	W. H. Bangs, Jr., Secy. L. B. of H.
Big Stone.....	Malta tp.....	...	...	1	...	...	...	H. French, Township Clerk.
	Ortonville.....	3	1	...	...	...	...	Dr. L. C. Lane, H. O.
Becker.....	Audubon tp.....	...	...	...	...	1	1	F. T. Satre, Township Clerk.
	Lake Park.....	...	...	2	...	...	...	Dr. J. H. Carson, H. O.
Nicollet.....	Brighton tp.....	...	...	12	3	...	...	{ Dr. D. B. Collins.
	St. Peter.....	2	...	...	...	7	1	{ A. Jacobson, Ch. B. of S.
								{ Dr. D. B. Collins, H. O.
								{ Dr. G. W. McIntyre, H. O.
Wabasha.....	Mazeppa.....	29	10	...	...	...	...	Dr. A. T. Bowen, H. O.
	Zumbro Falls.....	4	...	...	...	...	...	Dr. Chas. Hill.
LeSueur.....	Kasota tp.....	...	...	...	...	1	...	Dr. G. W. McIntyre.
Washington.....	Stillwater.....	...	...	2	...	...	...	Dr. E. Cooley, H. O.
Meeker.....	Ellsworth tp.....	...	...	2	1	...	...	J. M. Mousley, Township Clerk.
Isanti.....	Athens tp.....	...	...	...	...	4	2	N. A. Ahlstrom, Ch. B. of S.
Sibley.....	Henderson.....	...	...	1	...	...	...	Dr. J. D. Simpson, H. O.
Winona.....	St. Charles.....	...	...	22	4	...	...	Dr. C. N. Clarke, H. O.
Henepin.....	Maple Grove tp....	7	2	27	4	...	...	Wm. E. Evans, Ch. B. of S.
	Excelsior.....	...	...	1	1	...	...	Dr. Jas. R. Walker, H. O.
Lyon.....	Tracy.....	1	1	...	...	...	...	Dr. H. M. Workman, H. O.
Dakota.....	Farmington.....	3	3	...	...	...	...	Dr. E. D. Abell, H. O.
Crow Wing.....	Brainerd.....	2	...	...	...	6	2	Dr. J. L. Camp, H. O.
Mower.....	Austin.....	...	...	2	1	...	...	Dr. Thos. Phillips, H. O.
Dodge.....	Claremont.....	...	...	...	...	...	...	Dr. O. F. Way, H. O.
Kandiyohi.....	Willmar.....	1	...	...	...	...	...	Dr. E. S. Frost, H. O.
Fillmore.....	Lanesboro.....	...	...	1	1	...	...	Dr. J. R. DeCousens, H. O.
Ramsey.....	White Bear Lake..	3	1	...	...	...	...	Dr. H. Roman, H. O.
Norman.....	Ada.....	...	...	1	...	...	...	Dr. C. S. Putnam, H. O.
Scott.....	Shakopee.....	...	...	...	...	3	...	Dr. H. O. Smith, H. O.
Faribault.....	Wells.....	...	...	6	2	...	...	Dr. T. S. Fellows, H. O.
Chippewa.....	Big Bend tp.....	...	...	3	2	...	...	Dr. C. E. Rogers.
Otter Tail.....	Fergus Falls.....	...	...	2	...	...	...	Dr. B. F. Mott, H. O.
St. Louis.....	Duluth.....	...	...	43	10	...	...	Dr. F. O. Sherwin, H. O.
	Tctal.....	117	35	315	94	86	26	

\*School for Idiots and Imbeciles.

TABLE III.

DIPHtheria.												SCARLATINA.											
ST. PAUL												ST. PAUL											
MINNEAPOLIS												MINNEAPOLIS											
STILLWATER WINONA												STILLWATER WINONA											
No. cases	No. deaths	Under 10 years of age	10 years and over	Males	Females	Under 1 yr.	1 to 5 yrs.	5 to 10 yrs.	10 to 20 yrs.	Male.	Female	No. cases	No. deaths	Under 10 years of age	10 years and over	Males	Female	No. deaths	No. cases	Male	Female	No. deaths	No. cases
1884	26	6	18	12	14	11	7	4	1	7	4	4	1	1	1	1	1	1	1	1	1	1	1
Aug.,	26	6	18	12	14	11	7	4	1	7	4	4	1	1	1	1	1	1	1	1	1	1	1
Sept.,	21	9	13	13	18	17	8	3	1	8	9	7	1	3	1	1	4	2	3	1	1	1	1
Oct.,	23	10	15	11	14	15	4	3	4	8	9	1	1	3	1	1	4	4	1	1	1	1	1
Nov.,	43	13	12	11	26	15	6	5	2	6	11	1	2	8	1	5	3	1	1	1	1	1	1
Dec.,	43	14	31	12	31	15	2	4	2	4	11	1	1	8	2	2	3	1	1	1	1	1	1
Jan.,	62	48	12	31	29	15	2	4	2	4	11	1	1	8	3	2	3	1	1	1	1	1	1
Feb.,	1885	43	16	30	33	8	2	4	1	7	1	4	1	5	13	7	3	1	3	1	1	1	1
March,	28	4	12	7	14	5	3	2	1	7	1	2	1	13	11	2	3	1	3	1	1	1	1
April,	14	2	6	3	17	5	3	2	1	2	6	2	1	14	3	12	3	1	4	1	1	1	1
May,	45	3	14	6	3	6	5	1	1	3	2	2	1	25	5	18	13	2	1	1	1	1	1
June,	17	3	29	16	21	6	3	2	1	3	3	8	1	21	4	4	13	2	2	1	1	1	1
July,	31	9	23	8	18	5	1	1	1	4	1	1	1	20	2	11	7	1	16	2	1	1	1
Total..	385	101	272	111	165	218	102	53	29	15	56	46	31	6	146	69	72	12	47	9	3	2	9
Aug.,	1885	5	14	14	14	2	5	1	1	5	4	7	1	4	24	12	13	2	14	1	1	1	1
Sept.,	18	14	3	4	13	8	5	2	1	3	5	1	1	13	1	6	7	1	13	1	1	1	1
Oct.,	29	8	21	17	15	7	4	2	1	2	2	1	1	20	8	12	13	1	19	1	1	1	1
Nov.,	43	9	25	16	16	7	5	1	1	5	2	1	1	41	15	25	26	1	22	1	1	1	1
Dec.,	1886	44	10	28	16	18	6	3	1	2	3	1	1	5	35	13	25	2	35	1	1	1	1
Jan.,	24	6	16	8	15	9	2	1	1	1	6	1	1	68	24	27	38	1	28	1	1	1	1
Feb.,	26	7	11	14	11	2	1	2	1	1	2	3	1	45	9	24	30	4	37	1	1	1	1
March,	30	4	18	12	15	12	5	2	2	4	8	2	1	48	5	26	30	4	37	1	1	1	1
April,	12	4	10	2	6	7	1	2	2	4	4	2	2	45	8	12	15	4	23	1	1	1	1
May,	32	4	19	11	15	11	8	2	1	2	6	2	2	29	7	15	14	9	26	1	1	1	1
June,	40	4	19	11	15	11	8	2	1	2	6	2	2	20	3	14	14	1	16	1	1	1	1
July,	37	11	18	9	16	11	3	1	1	2	1	1	1	15	2	10	12	4	13	1	1	1	1
Total..	342	76	219	120	175	164	78	40	24	11	36	42	22	1	415	191	223	47	271	45	32	13	8
Aug.,	1887	41	27	14	21	11	8	2	1	7	4	1	1	20	3	19	15	8	17	5	5	5	5
Sept.,	26	8	22	4	13	21	1	9	3	12	9	1	1	23	18	5	10	13	18	3	3	3	3
Oct.,	82	12	26	6	13	19	33	10	2	15	18	15	3	3	24	16	13	4	19	1	1	1	1
Nov.,	42	9	33	9	17	25	30	7	5	10	20	3	2	42	11	35	21	3	1	1	1	1	1
Total..	141	41	108	33	64	77	95	27	11	44	51	21	5	114	17	96	52	62	45	8	8	8	8
Grand total	808	221	599	294	404	459	275	111	148	80	37	136	139	74	78	518	451	357	363	43	43	43	43



Table IV.—SMALL POX IN MINNESOTA, FROM AUGUST, 1884, TO DECEMBER, 1886.

No.	Locality.	County.	Date of Report	Name of Reporter.	Cases.	Deaths.	Origin.
1	Verdi	Lincoln	Jan. 16, 1885	M. B. Mattice, M. D.	3	0	Dakota.
2	Through St. Paul to Winnepeg	.....	March 21, 1885	R. R. Officials	1	—	Canada.
3	Crookston	Polk	April 13, 1885	C. E. Dampier, M. D., H. O.	11	0	Canada.
4	Walker's camp	Polk	April 15, 1885	C. E. Dampier, M. D., H. O.	6	0	Canada.
5	St. James	Watonwan	April 19, 1885	T. Kirk, M. D., H. O.	1	1	Tramp.
6	Rosebud tp.	Polk	May 15, 1885	T. Hersberger, C. B. S. A. Nelson, M. D., H. O.	3	0	Canada (Walker's Camp).
7	Lessor tp.	Polk	June 1, 1885	H. A. Pineault, M. D., *	5	0	Canada (Walker's Camp).
8	Fairfax tp.	Polk	June 30, 1885	C. E. Dampier, M. D., H. O.	6	2	Canada (Walker's Camp).
9	Excelsior	Hennepin	Sept. 1, 1885	J. R. Walker, M. D., H. O.	1	0	Peoria, Illinois.
10	Windom	Cottonwood	Nov. 22, 1875	Dr. Green.	1	0	Unknown; supposed from infected newspaper from Canada.
11	Moorhead	Clay	Jan. 15, 1886	John Kurtz, M. D., H. O.	1	0	Traveling man from Illinois; probably exposed in Dakota.
12	Crookston	Polk	May 3, 1886	C. E. Dampier, M. D., H. O.	1	0	Unknown; probably from infected clothing.
13	Minneapolis	Hennepin	June 11, 1886	T. F. Quimby, M. D., H. O.	5 /	0	From Sweden, May 22, 1886.
14	Bridgewater tp.	Rice	Aug. 20, 1886	J. R. Phillips, M. D., H. O.	15 /	0	Iowa.
15	Badger tp.	Polk	Oct. 26, 1886	W. A. Hunt, M. D., H. O. C. E. Dampier, M. D., H. O.	1	0	Dakota.
Total number of outbreaks.....					47	3	
" " counties invaded.....							15
" " cases.....							7
" " deaths.....							47
							3



Table V.—MINNEAPOLIS.

Showing the relation of deaths from croup to deaths from laryngitis, and the increase of croup coincident with diphtheria.

	CROUP.						LARYNGITIS.					
	Total	Sex		Under 1 yr.	1 to 5 yrs.	5 to 10 yrs.	Total	Sex		Under 1 yr.	1 to 5 yrs.	5 to 10 yrs.
		M	F					M	F			
August, 1884.....	4	2	2	...	3	1	...	...	...	...	...	...
September, ".....	3	2	1	...	3	...	...	...	...	...	...	...
October, ".....	1	1	...	1	...	...	...	...	...	...	...	...
November, ".....	7	5	2	1	4	2	...	...	...	...	...	...
December, ".....	1	1	...	1	...	...	1	1	...	1	...	...
January, 1885.....	3	3	...	1	2	...	...	...	...	...	...	...
February, ".....	...	...	...	...	...	...	...	...	...	...	...	...
March, ".....	2	2	...	...	2	...	1	1	...	1	...	...
April, ".....	2	2	...	...	...	...	...	...	...	...	...	...
May, ".....	2	2	...	1	1	...	...	...	...	...	...	...
June, ".....	1	1	...	1	...	...	...	...	...	...	...	...
July, ".....	...	...	...	...	...	...	...	...	...	...	...	...
Total.....	24	19	5	6	15	3	2	2	...	2	...	...
August, 1885.....	...	...	...	1	...	...	...	...	...	...	...	...
September, ".....	3	2	1	3	2	...	1	1	...	1	...	...
October, ".....	4	3	1	5	1	...	...	...	...	...	...	...
November, ".....	5	3	2	...	...	...	...	...	...	...	...	...
December, ".....	1	...	1	...	1	...	...	...	...	...	...	...
January, 1886.....	7	4	3	1	6	...	...	...	...	...	...	...
February, ".....	5	4	1	1	1	2	...	...	...	...	...	...
March, ".....	5	1	4	1	4	...	1	1	...	...	1	...
April, ".....	3	1	2	3	...	...	1	...	1	...	1	...
May, ".....	1	...	1	...	1	...	...	...	...	...	...	...
June, ".....	4	1	3	1	3	...	...	...	...	...	...	...
July, ".....	2	1	1	...	2	...	...	...	...	...	...	...
Total.....	40	20	20	7	26	6	3	2	1	1	2	...
August, 1886.....	5	1	2	...	2	1	...	...	...	...	...	...
September, ".....	3	2	3	1	2	2	1	...	...	...	1	...
October, ".....	15	10	5	1	9	5	3	2	1	...	3	...
November, ".....	16	12	4	1	11	4	...	...	...	...	...	...
Total.....	39	25	14	3	24	12	4	2	1	...	4	...
Grand Total.....	103	64	39	16	65	21	9	6	2	3	6	...

Note that croup increased materially when Diphtheria was at its height. T. F. Q.

# PUBLIC HEALTH IN MINNESOTA.

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VOL. II. NO. 11.

JANUARY, 1887.

WHOLE NO. 23.

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**R**EDUCED RAILROAD FARES.—The following letter is published for the information of delegates to the Conference.\* It is the *law* of the matter to which delegates must conform. We have no authority or discretion to change it in any way. "C. M. & St. P., C. St. P. M. & O., C. B. & N., M. & St. L., M & N. W., and St. P. & D., will return at one-third fare on certificate. N. P., and M. & P. (from Minneapolis), at one-fifth fare on certificate. Delegates from points on the lines of the following roads, C. M. & St. P., C. St. P. M. & O., M. & St. L., St. P. & D., and N. P., *will have to procure receipts from ticket agents at starting point, in order to procure reduced return tickets.*

"P. A. ROCKWELL,

"Secretary St. Paul and Minneapolis Passenger Association."

**S**ANITARY LEGISLATION.—We furnish with this number the report of this Board to the present Legislature. Attention is called to the proposed legislation. In the matter of kerosene, we are sure that our position is right, and that any material variation, will be an injury to all who use this essential, and cheap, means of obtaining artificial light. Please read the discussion of the matter on p. 22 of the Report. We trust the Legislature will not make the mistake, in correcting the evident evils of the present system of inspection, of losing all that we have gained of safety, and better quality of oil, heretofore.

**T**HE PURITY OF THE PUBLIC WATER SUPPLY, is attracting more and more the attention of thoughtful people, outside Boards of Health. With the increase of manufacturing industries of various sorts, the dangers of this kind are constantly increasing. It is surely necessary to provide, *now*, for the prevention of evils of this character, which, in a few years, may be so great as successfully to resist control, or to make it as tedious and expensive, as it has proved to be in Massachusetts, and other Eastern States.

**L**ABORATORY WORK.—The press for water and food analysis is so great that we must ask our friends to have patience. Our rule is to give the most important matters precedence.

**W**ATER ANALYSIS. NECESSITY OF ABSOLUTE CLEANLINESS OF ALL VESSELS AND CORKS USED FOR SAMPLES OF WATER SENT FOR ANALYSIS TO OUR LABORATORY.—Much valuable time has been lost to the Sec-

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\*Date of meeting, Thursday and Friday, February 24 and 25, 1887.

retary in the last two months, by the use of dirty vessels and corks for such water. In one case a vinegar jug was used; in another a syrup jug; in another large jars in which traces of a medicinal syrup—probably tolu—were found; in another, a clean bottle, but a soiled cork; and so on. This will not do. If we furnish the time, knowledge, apparatus and work, it is a very small, but a very important contribution, that those who are entitled to our analysis furnish a sample of water in *new, gallon or half-gallon, clean glass bottles, with new corks*, tied down and sealed. If jugs must be used, always take new ones, and rinse them thoroughly in the water from which the sample is to be taken, till free from straw or other extraneous matter, and use a new cork, tied and sealed as above. Unless these necessary conditions are complied with hereafter, we shall be compelled to decline the analysis.

**ANTHRAX OR BLACK LEG IN CALVES.**—An outbreak of this disease among a herd of fat and apparently healthy calves in Goodhue County, is now under observation by the Secretary, with Dr. Bissell, V. S., of Red Wing. They have already made two post mortem examinations, and more will be made should other deaths occur. The symptoms come on suddenly, in animals who appear in unusual health and spirits. The first indication is lameness in one limb, followed by swelling in some part, usually the shoulder or thigh. Within a few hours the animal is down, in distress with hard breathing and swelling of belly. Death has followed within twenty-four hours of first symptoms.

*Post mortem.*—Body swollen, skin on affected limb crackles on pressure; tongue protruding, and bloody discharge from one or both nostrils; muscles and tissues of affected limb full of bloody serum, with occasional small clots, or rather dark discolorations; lungs, healthy; heart, full of black blood, and dark colored; *spleen*, not much enlarged, but darkly mottled. First stomach full of food, but healthy in appearance, as are also the intestines; some urine in bladder; kidneys congested. In the last case, the entire lining membrane of the belly (peritonæum) darkly congested.

No treatment has availed. To prevent, if possible, more cases, feed has been reduced to hay and bran, and a little saltpetre given with each meal. In fected stalls have been cleaned, and all manure, etc., disposed of. Samples of blood, spleen, kidneys and affected muscles have been sent to the Bureau of Animal Industry, Washington, for examination, at the request of the Chief of that Bureau, who inclines to the opinion that the disease is anthrax.

The affected had no association with other animals liable to give infection. The barns are roomy, clean and warm. The feed, we think, has been excessive in quantity and quality. It has been reduced in both respects.

**CONFERENCE OF STATE BOARD OF HEALTH AND CATTLE GROWERS' AT CAPITOL, ST. PAUL, DEC. 30, 1886.**—In response to an invitation from this office, the following named gentlemen met the Governor, and the State Board of Health at the Capitol: Hon. A. Scheffer, J. J. Hill, J. B. Powers, Springer Harbaugh, of St. Paul; Wm. Fowler, C. N. Parker, of Newport; Capt. A. H. Reed, of Glencoe; Chas. Le Vesconte, Hastings; R. C. Judson, Farmington; Mr. Cosgrove, Le Sueur; Frank Gifford, Shakopee; A. S. Bradford, Empire; John Cooper, St. Cloud; Thos. Canfield, Lake Park; A. M. Johnson, Benson; Ole Peterson, Gilchrist; I. C. Stearns, Zumbrota; and C. J. Alloway, V. S., of Grand Forks, Dak.; and Drs. Hand, Leonard, and Hewitt, of the State Board of Health.

The conference was called to order by the Governor, who in a few appropriate remarks explained its object, after which the Secretary described the action which the State Board had taken as respects glanders in the State, from March 7, 1885, to December 1, 1886, distributing copies of his report on that subject, as illustrative of the measures taken by the State Board in the control of infectious diseases of animals. The circular letter on pleuro-pneumonia of cattle was submitted, and the Secretary detailed his investigations of the disease in Chicago. To his statement he appended the following telegrams

furnished for submission to the conference, and asked for a full and cordial support to the measures of the Board for the warding off of this disease from our borders.

From State Board of Live Stock Commissioners of Illinois:

"Two hundred cases pleuro-pneumonia to date. None living now that we know of; but one case outside Chicago, in town of Jefferson, Cook County. This Board are in charge of all centres of infection. The Agricultural Department furnish three to five veterinarians constantly, and pays all expenses for guarding infected premises as fast as emptied. No animals can be shipped to Minnesota, except in accordance with your laws. Have not yet the data as to cattle going to Minnesota by rail to December 1, 1886."

From D. E. Salmon, V. S., Chief Bureau of Animal Industry:

"Pleuro-pneumonia now confined to New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia and Illinois, so far as known. Most dangerous to you from Cook County. Number of cases not accurately known. I do not consider the isolation there satisfactory."

A free discussion followed, in which surprise was expressed at the thoroughness and success of the work heretofore done by the State and Local Boards of Health. Mr. J. J. Hill laid special stress on the necessity for an inspection, on the hoof, of cattle intended for slaughter, and of all fresh meat, whether slaughtered inside, or outside the State. In this position he was strongly supported by other speakers. He illustrated danger of tuberculosis by his own costly experience with imported stock, which, however, he killed and buried as soon as the fact was known, slaughtering the calf of an infected cow, rather than take the chance of a spread of the disease.

Mr. Le Vesconte, of Hasting, called attention to a violation of the agreement between the State Board of Health and the Illinois Live Stock Commission, by one of their Deputy Veterinary Surgeons. The Secretary of this Board forwarded Mr. Le Vesconte's affidavit, and the commission replied: "Before receiving your letter we called the veterinary surgeon referred to, to account, for issuing a certificate in the manner he did, and have his assurance that it will not be repeated." The following resolutions, proposed by Mr. J. J. Hill, were unanimously adopted, after which the meeting adjourned:

*Resolved:* That we have listened with great pleasure to the report made by Dr. Hewitt, Secretary of the State Board of Health, and that the work done by the Board during the past year will prove of the greatest benefit to the State and deserves the fullest commendation of every citizen.

*Resolved:* That the State Legislature should, at the coming session, provide a contingency fund, sufficient to enable the State Board of Health to continue its work for the benefit of the health of all the citizens of the State, and the preservation of the cattle interests of the farmers of the State."

### CORRESPONDENCE.

OFFICE OF STATE BOARD OF LIVE STOCK COMMISSIONERS, }  
SPRINGFIELD, ILL., December 30, 1886. }

C. N. HEWITT, M. D., Sec'y State Board of Health, Red Wing, Minn.

*Dear Sir:*—By direction of the Board, I give you the following information in addition to that sent you yesterday by wire.

*Answer 1*—Total number of cattle in Chicago known to have been diseased with, or exposed to, pleuro-pneumonia to date, 3,400. (2) Total number at date, about 804. (3) Total number at date in distillery stables, 204. (4) Total number outside, 600. (5) Location of diseased and exposed cases, outside of Chicago, in Cook County—towns of Jefferson, Lake, Hyde Park, Cicero, and Lake View. (This territory is now being thoroughly investigated, by State and Government veterinarians. Evidence of chronic cases have been found throughout this territory.) (6) No cases are known to exist anywhere in the State outside of Cook County, and all reported cases have been promptly investigated. (7) The Board are in full charge of all infected places. (8) The United States Department of Agriculture, through Dr. Salmon, Chief of the Bureau of Animal



Industry, is, and has been, since the discovery of the existence of the disease, cordially co-operating with this Board in endeavoring to control and extirpate the disease in Chicago, and in investigating any reported supposed outbreak anywhere in the State. (9) Immediately upon the discovery of the disease, Dr. Salmon came to Chicago to make a personal examination of the disease, and at once entered into co-operation with the Board, doing all that could be done under the National and State laws. He, as soon thereafter as possible, placed six veterinarians of the Bureau at the disposal of the Board, and since that time from three to five of his men have been kept busy investigating and locating the disease, and performing such duties as the Board or the Bureau indicated. He also assumed the payment of all expenses attendant on maintaining an effective quarantine on the distillery stables, furnishing for that purpose a sufficient number of Deputy Sheriffs, and also such number as are required in pursuing the investigation of disease elsewhere in Cook County. The assistance furnished this Board by the Department of Agriculture, has greatly aided the Board in dealing with this outbreak. (10) The Board has used all possible means under the law to prevent any animal of the bovine species from being taken out of Chicago, or the infected territory in Cook County, where the disease is known to exist, and we know of none having been removed. Numerous instances have been reported of persons attempting to sell, but the existence of the disease is so well known, that all such attempts have proven fruitless, and such cases have been promptly quarantined. (11) The disease is under such control that no cases of infection can escape in the direction of Minnesota. (12) Besides the State veterinarian, there are, in the State at different points, twenty assistant veterinarians duly commissioned, who respond to all questions from owners of cattle, to examine their cattle, and, if found healthy, that fact is certified. (13) We have not received complete reports from our veterinarians, so are unable to state the number of cattle coming to Minnesota by rail since December 1, 1886.

The veterinarians of the Bureau, before they commenced work in this State, were commissioned by the Board as Assistant State Veterinarians.

All the cattle of the "Phoenix," "Shufeldt," and "Chicago" distillery stables, have been slaughtered by direction of the Board. The 204 in the "Empire," are all the distillery cattle remaining.

The entire force of veterinarians are at work on the outside cattle, and all exposed cattle are being quarantined. As rapidly as possible all these will be destroyed.

Hoping the above information will prove satisfactory, I remain,

Very truly yours,

C. P. JOHNSON, Secretary.

#### INFECTIOUS DISEASES REPORTED DURING THE MONTHS OF DECEMBER AND JANUARY.

##### DISEASES OF MEN.

Diphtheria.....	{ cases,	58
	{ deaths,	18
Scarlatina.....	{ cases,	60
	{ deaths,	7

##### DISEASES OF ANIMALS.

Cases of glanders remaining on hand isolated or not accounted for at first of month.....	15
Reported during the month.....	12
Killed.....	16
Released.....	1
Isolated.....	6

Remaining Feb. 1st isolated or not accounted for..... 10



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FEBRUARY, 1887.

WHOLE NO. 24.

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**D**R. W. S. ROBERTSON, PRESIDENT OF THE IOWA STATE BOARD OF HEALTH, DIED JANUARY 20, 1887, AGED 56 YEARS.—A successful pioneer of State Medicine in Iowa, his loss is a heavy one for his Board and his State. He first won the front rank in his profession, and in the confidence of his brethren, and then gave the full benefit of his experience, capacity, reputation and enthusiasm to establish and sustain the Board, as an active and efficient agent for the public good. He died "with his harness on," worn out before his time, an example, and a warning to us all. The sincere sympathy of all, who were his fellow-workers, though in other fields, is offered to his immediate associates. He has left behind him the vigorous impulse of his work—and his memory. May both urge them forward, and nearer to the ideal which stimulated and sustained him.

---

## CORRESPONDENCE.

The following telegram was received by the Secretary:

"WASHINGTON, D. C., Jan. 30, 1887.

"Please telegraph me immediately, stating if you investigated the cattle disease in Chicago. Have you any doubts of its being pleuro-pneumonia, or about its contagious character? Do you think cattle affected with it should be slaughtered or held in quarantine? I want reply for information of Congress."

"D. E. SALMON,

"Chief of Bureau of Animal Industry."

To which he replied Jan. 31, 1887:

"In September, last, I examined cattle in Chicago, on the hoof and post mortem. Saw many cases of pleuro-pneumonia, and abundant evidence that the disease was contagious. All cattle having pleuro-pneumonia should be killed, and places and things disinfected. All suspected should be isolated till reasonable doubt is removed. Send copies of this telegram to Minnesota Senators and Representatives."

OFFICE PRESIDENT CONSOLIDATED CATTLE GROWERS' }  
ASSOCIATION OF THE UNITED STATES, }  
SPRINGFIELD, ILL., Feb. 9, 1887. }

*Dr. Hewitt:*—There seems to be some doubt as to whether the Chicago cattle are affected with the same disease which has created such ravages in Europe, Australia, and South Africa. I would esteem it a great favor if you will give me your opinion on that subject, and also if it is possible for the sanitary surroundings at the Chicago distilleries to produce contagious pleuro-pneumonia, or lung plague. With great respect,

Very truly yours,

D. W. SMITH,

Pres. Consolidated National Cattle Growers' Ass'n of the United States.

To which the Secretary replied Feb. 11, 1887.

"The disease prevailing in Chicago among cattle is infectious pleuro-pneumonia, as proven by its history there, and the post mortem examination of its victims. The symptoms and post mortem appearances, correspond so closely

with those reported as characteristic of the European, Australian, and South African plague, as to leave no doubt in my mind, that they are examples of one and the same disease. It has a specific cause, and there is no evidence that it occurs now, except by the transfer of the infection from an animal sick of the disease, to one, before, free from it."

DR. CHARLES N. HEWITT,  
Secratary State Board of Health,  
Red Wing, Minnesota.

WASHINGTON, D. C., Dec. 29, 1886.

*Dear Sir:*—I herewith send you a report of the work done by me in water analysis in the laboratory of your Board during the latter part of the last and early part of the present month. In transmitting this, I desire to express my appreciation of, and thanks for, the unflagging interest which you manifested in the progress of this analytical work, by giving me your personal assistance in carrying out its details,—an assistance which your familiarity with the processes adopted in the investigation rendered peculiarly valuable, and which enabled me to accomplish much, satisfactorily, in a comparatively short time. It is gratifying to know that the results of the analyses heretofore made in your laboratory, and published in the reports of your Board, 1879-84, confirm, and are confirmed by, those which form the subject of the present report.

Very sincerely yours,

CHARLES SMART.

**W**ATERS were examined from the Mississippi River in the vicinity of Aitkin, Brainerd, St. Cloud, Minneapolis, Fort Snelling, St. Paul, Red Wing, and Winona; from the large tributary streams, the Minnesota River at Mankato and Fort Snelling, and the St. Croix at Stillwater City, and from certain lakes, wells, etc., concerned in the water-supply of these and other towns in the State.

Several analytical processes were used, with the view of determining the animal or vegetable origin of the dissolved organic matter, and the stability or putrefactive tendency of its constitution. In a few instances the amount of saline and other solids contained in the water, was noted as a matter of record, and in others as incidental to observations on the appearance and properties of the organic residue. Oxidation by permanganate in acid solution, was used to estimate the relative proportion of carbon in the organic matter, and by permanganate in alkaline solution to give, by the resulting quantity of albuminoid ammonia, an approximate view of the organic nitrogen. The nitrates were estimated to show the quantity of the latter that had been decomposed by natural processes, and the ammonia and nitrous acid to indicate whether these nitrates were recently or remotely connected with the nitrogen of existing organic matter. Chlorine also was determined on account of its association with the excreta of animal life.

Naturally the first question asked by those interested in local results will be: Is the water a good or wholesome water? In no case may this query be answered positively in the affirmative. A water may be shown by analysis to contain nothing more than is found by the same processes in other waters that are known by experience to be wholesome, yet the water in question may not be affirmed to be equally wholesome. A presumption in favor of wholesomeness may be stated, but beyond this the analyst's opinion cannot with propriety go, for it is well known that typhoid fever has been propagated by waters that have yielded fair results on analysis. Nor may a positive assertion be made as to unwholesomeness, although here the restrictions are weaker, resting as they do on the fact that many waters known to have sewer or privy-vault connections, have been used for long periods with impunity. Contamination and possible danger may be affirmed, but not unwholesomeness. To many this may seem like a verbal refinement, and it would be well if it were so regarded by all; but so long as corporations and municipalities have money invested in pumping up supplies that are known to be contaminated, and therefore possibly dangerous, so long will the distinction between contamination and unwholesomeness be painted in the most striking colors.

The following table gives a synopsis of the analytical results:

## ANALYTICAL RECORD OF CERTAIN WATERS

*Examined in the Laboratory of the State Board of Health of Minnesota during November and December, 1886.*  
(RESULTS ARE EXPRESSED IN PARTS PER 100,000 OF THE WATER.)

	Total solids	Loss on igniti	Nitrates	Nitrates	Chlorine	Oxygen required	Free Ammonia	Aluminoid Ammonia	Remarks.
<b>Waters from ALTON, Minnesota:</b>									
Mississippi River above city.....	19.0	6.0	none	.015	.21	1.204	.005	.044	Water clear and almost colorless; carbon in residue dissipated with difficulty, but with little odor. Clear and colorless; faint darkening on ignition.
" " opposite city.....			none	.023	.21	1.160	.006	.027+4	
" " below.....			none	.037	3.40	1.228	.023	.022+4	
Village well.....	40.0	12.0	.01			.161	.009	.008	
<b>Waters from BRAINERD, Minnesota:</b>									
Mississippi River below city.....	15.0	6.5	none	.0074	.17	1.083	.003	.037+4	Clear; carbon dissipated with difficulty.
Waters from ST. CLOUD, Minnesota:									
Creek above water-works.....			.005		1.20	.900	.004	.044+4	Clouded and with much sediment.
Missippi River, tap in vat-w'ks.....	24.0	3.5			.15	1.132	.022	.0235	Clear and colorless.
" " household tap.....					.20	.868	.0105	.017+4	
" " below city.....						1.224	.027	.026	
<b>Waters from STILLWATER, Minnesota:</b>									
St. Croix River $\frac{1}{4}$ mile above city.....	16.0	2.0	none	.004	.15	.604	.0025	.013+4	No marked taste
" " 1 mile below city.....			trace	.019		.741	.0055	.0215	
Lake McKusick.....			none	.004	.14	.750	.005	.014	Yellowish but clear.
Spring entering lake.....	16.0	1.0	trace	.005	.10	.317	.002	.0175	
Hydrant water.....	21.0	3.0	present	.005	.20	.135	.012	.005+3	Clear; faintly yellow.
Well on the flats.....	43.0	5.0	trace	present	.10	.341	.035	.010+4	Clear and colorless.
Well in residence part of city.....	19.5	2.5	trace	trace	6.20	.067	.038	.004	Faintly yellow; clear.
<b>Waters from MINNEAPOLIS, Minn.:</b>									
Missippi River 2 miles above city.....	23.0	6.0	none	.080	.16	.731	.013	.0135	Clear and colorless.
" " above water-w'ks.....			none	.0074	.16	.755	.006	.023	
" " ".....			none	.01	.13	.914	.012	.014+4	Clear but somewhat yellow tinged; no marked taste or odor.
" " tap in ".....	23.0	5.0	trace	.0046	.23	.794	.020	.014+4	
" " ".....			none	.01	.13	.687	.0045	.026	
" " household tap.....			none	.0046	.14	.643	.025	.014+4	Clear; faint darkening on ignition; nitrous odors.
" " ".....			none	.013	.13	.736	.0185	.010+4	
" " below flats.....	21.0	5.0	trace	.0046	.17	.726	.020	.010+4	
" " ".....			trace	.013	.18	.717	.009	.025	
* " ".....			present	.017	.47	.848	.0615	.026+4	
Well, unknown.....	148.0	42.0	trace	present	10.80	.307	.076	.012+3	
<b>Ice from Cedar Lake</b>									
Mississippi River.....			trace		.19	.297	.025	.025	Clear and colorless.
Waters from MANEATO, Minnesota:			trace		.14	.219	.015	.015	
Blue Earth River.....	45.0	6.0			.20	.332	.014	.017	
Minnesota River above city.....	45.0	5.0	trace		.25	.480			
" " opposite city.....			trace		.34	.375	.024	.023	
" " below city.....			trace		.80	.608	.039	.035+5	

## ANALYTICAL RECORD OF CERTAIN WATERS.—Concluded.

	Total solids	Loss on ignition	Nitrites	Nitrates	Chlorine	Oxygen required	Free Ammonia	Aluminoid Ammonia	Remarks.
Water from J. T. SNELLING, Minn.									
Mississippi River .....			trace	.010	.16	.877	.008	.033	{ Clear; yellowish.
Minnesota River .....			trace	.015	1.18	.327	.045	.028-4	
Water from ST. PAUL, Minnesota.			none	.010	.45	.714	.044	.012-4	Yellow but clear.
Mississippi River at city .....	13.5	2.0	.01	.025	.58	.770	.132	.060	Somewhat yellow and with a dark colored flocculent sediment.
" " opp. water-works.	30.0	6.0	none	.023	.22	.750	.035	.021	Yellow but clear.
" " " at Wacouta St.			trace	.066	.66	1.028	.321	.066-5	Faintly yellow with a dark colored flocculent sediment.
" " " below city .....			present	.086	.45	.773	.025	.014-3	Yellow but clear.
" " " "			trace	.080	.66	1.062	.241	.052-4	Faintly yellow with a sediment of dark colored flocculi.
Lake Phalen .....	14.0	5.5	trace	?	.075	.336	.002	.006-3	{ Clear and colorless.
" Vadna .....	9.5	3.0	none	?	.075	.432	.033	.012-3	{ Nearly colorless; a sediment of grayish flocculi.
Ice, Mississippi at city .....			trace	.016		1.316	.100	.069	{ Clear, colorless; a whitish pulverulent sediment.
" " below city .....			trace	.011		.087	.074	.084	{ Colorless but somewhat clouded; a flocculent sediment.
" " at city .....			present		.25	.302	.011	.028-5	
" Lake Phalen .....			none		.13	.117	.011	.017	
" " Como .....			trace		.14	.200	.010	.028	
Water from RED WING, Minnesota.									
Mississippi River, box above city .....			trace	.014	.30	.816	.010	.024	{ Yellow, clear; no odor; alluvial taste
" " opposite city .....			trace	.013		1.024	.025	.018	{ Brownish, clear; alluvial & ferruginous taste; sediment reddish from iron.
" " at intake of w.w. ....	19.0	3.0	none	.012	.20	.897	.007	.010-3	{ Faintly clouded white and with sulphuretted taste and odor.
" " at water-works .....	17.5	3.5	none	.011	.27	.816	.013	.012-4	{ Transparent and colorless; no taste nor odor.
" " tap .....	16.5	5.5	.02		.27	.778	.002	.018-5	
Well, artesian, at R. R. station ..	33.0	10.0			.30	.528	.035	.0155	
" " " "					8.60	.000	.0195	.002	
" " Scandinavian .....	38.0	10.0	present	2.042	3.60	.029	.005	.0015	{
Cistern, private residence .....	16.5	2.5	trace	present	.22	.360	.057	.008	Transparent and colorless; no taste nor odor.
Ice, Mississippi River at intake ..					.12	.220	.002	.008-4	
Water from WINONA, Minnesota.									
Mississippi River above city .....	20.0	5.0	none	.074	.22	.897	.035	.0155-4	{ Yellowish but clear.
" " opposite city .....			none	.0074	.22	.868	.014	.018-4	
" " " below .....			trace	.01	.25	.777	.025	.034	
" " " "			none	.0074	.25	1.102	.001	.0185	
" " " "			none	.017	.21	.809	.004	.052	
Lake Winona .....	34.0	13.0	none		2.30	.720	.023	.002	
Well, general supply .....	32.0	10.0	present		2.00	.110	.012	.006	
" " Fourth Ward .....	25.0	4.0	none	present	1.60	.097	.020	.001	
" " Wilson & Sarnia .....	8.5	3.0	none	.565		.197	.040	.0015	{ Clear and colorless.
" " Park House .....	25.0	4.0	present	present	1.60	.117	.007	.001	
Waters from ROCHESTER, Minnesota:									
Well, unknown .....	20.0	6.			.25	.000	.002	.001	



In examining the waters of the upper Mississippi, singular and unlooked-for results were obtained by the process for determining the amount of oxygen required to oxidize the dissolved organic matter. These will be of much interest to those engaged in the study of natural surface-water, showing, as they do, in waters that are free from sewage, factory refuse, or other matters usually considered to be of dangerous quality, an amount of oxidizable organic matter such as would warrant an unhesitating condemnation of the water for domestic use. The rule which experience has hitherto educed, may be expressed as follows: Well waters which require .2 parts of oxygen per 100,000 of the water, are usually dangerously charged with the products of animal waste; but a surface water which has no manifest sewage inflow, may decolorize the equivalent of .4 parts of oxygen without being considered as of doubtful quality. The organic matter of surface waters is of a carbonaceous or vegetable nature, and is derived from decaying vegetation found on the water-shed. This is generally regarded as harmless; but when the amount of oxygen required exceeds .4, the water yielding this result approximates in character to that of swamps and marshes, and must be viewed with proportionate suspicion, or it is connected with some source of contamination which should be discovered and shown to be of a harmless nature before the water is warranted as wholesome in this respect. The water of the Mississippi River at Aitkin, Brainerd and St. Cloud contained an amount of vegetable organic matter largely in excess of that regarded as coming within the limits of wholesomeness in a surface water; Aitkin waters required 1.204 of oxygen; Brainerd, 1.083; St. Cloud, 1.132. The water from a Louisiana swamp required 1.354.

The vegetable character of the organic matter in question was indicated by the relatively small amount of nitrogen evolved from it as ammonia; a dilution of sewage or other foul liquids of animal derivation that required this quantity of oxygen, would have been rankly ammoniacal or putrefactive in its odor. The vegetable matter in a swamp water is decomposed more readily, and yields a proportionately larger quantity of albuminoid ammonia than was obtained from the water of the upper Mississippi. Moreover this vegetable matter was of a stable or non-putrescible nature, as shown by the slow manner in which the albuminoid ammonia was evolved from it during the Wanklyn process. Some of these samples yielded so small a quantity of organic ammonia in the first measure of the distillate, that many analysts would have felt warranted in concluding the experiment at that point and reporting the water as comparatively free from nitrogenous substances; but a continuance of the distillation gave time for the gradual decomposition of the organic matter, and added to the quantity of albuminoid ammonia evolved until the process could be carried no further without risk to the retort. In these instances the experiment had to be concluded without having demonstrated the complete destruction of the nitrogenous matters. There remained an undetermined residuum, which has been expressed in the table by the *plus* sign,  $\frac{+}{-}$ , after the figures indicating the evolved ammonia. In waters of this character the amount of albuminoid ammonia will depend largely on the length to which the distillation is carried. As a record of this the number of measures of 50 c. c. each distilled from the water has been printed in connection with the *plus* sign.

Previous laboratory work had obtained results of this kind from such substances as Irish peat, and pine shavings, or sawdust. It is not unlikely, therefore, that the large quantity of permanganate required for the oxidation of the organic matter in these waters indicates no unwholesome constituent, but a carbonaceous and probably resinous contribution from the timbered lands of the water-shed. The St. Croix River contains a similar vegetable product which, although in smaller proportion than in the Mississippi, is nevertheless sufficient to raise doubts concerning the quality of the water, unless the harmlessness of its nature be demonstrated. The Minnesota River contains considerably less vegetable matter than the St. Croix, although more than is commonly found in Eastern rivers having a naturally clean water-shed. Evidently the Minnesota drains a country that is comparatively barren of the vegetation which so strongly charges the waters of the Mississippi and St. Croix.



The Mississippi River down to the lowest point at which its waters were examined, contained much of this carbonaceous matter,—sufficient to condemn its waters for potable use in the absence of a demonstration of the harmlessness of its nature.

This peculiarity of the waters of the upper Mississippi was, I found, well known in the laboratory of the State Board of Health of Minnesota, where the carbonaceous matter was considered related to "pine juice,"—the sap of the pine.

Another point in the natural history of these rivers is of interest,—the presence of an excess of chlorine in the waters of the Minnesota. Chlorine exists in small quantity in the Mississippi, the St. Croix, and the Minnesota as far down as Mankato; but at Fort Snelling the last mentioned river contains 1.18 parts, which must be referred to some other source than sewage contributions.

It was hoped that this series of analyses, in addition to indicating the influence of the sewers of Minneapolis and St. Paul on the character of the river water, would throw light on the subsequent operation of natural processes engaged in its purification. It was hoped, also, that the results would enable the analyst to give expression to the existence and probable amount of the sewage-inflow after the sewage had ceased to exist as such in the water. To this end waters were collected above, at and immediately, and distantly, below these cities, and the nitrates contained in the samples were carefully determined to show, if possible, the relation between the disappearance of organic nitrogen and the development of inorganic salts.

Running water is generally credited with the ability to purify itself, and, indeed, it is certain that much of the dissolved matter of sewage is readily destroyed by the agencies operating on it during its flow. Urea, for instance, is speedily decomposed into ammonia, which, with the ammoniacal products of putrefaction, is as speedily converted into nitric acid. But it seems probable that dilution has as much, if not more, to do with the disappearance of the sewage of Minneapolis and St. Paul in the Mississippi River, than the chemico-vital processes. The nitric acid in fifteen samples of river water, collected at various points above the inflow of sewage at Minneapolis, averaged .0113 per 100,000 of the water; in eight samples collected below Minneapolis, and at and immediately below St. Paul, the average quantity was .020; in nine samples from Red Wing and Winona, the average was .0110. Nitric acid is a stable compound and does not disappear from its solution as do ammonia and organic nitrogen. The reduction in its quantity at Red Wing and Winona to the average contained in the waters above Minneapolis, notwithstanding the polluted inflow at that city and St. Paul, must therefore be attributed wholly to the immensity of the dilution.

The same thing is shown by the chlorine estimations. Sixteen samples taken from above the inflow of the Minneapolis sewers, gave an average of .168 per 100,000 of the water; nine samples from Minneapolis and St. Paul yielded an average of .425, and ten samples from the river at Red Wing and Winona gave .246. The decrease by dilution is at first sight less in this case than in that of the nitrates; but when it is remembered that the Minnesota River contributes to the Mississippi, between Minneapolis and St. Paul, a large quantity of chlorine without a relatively corresponding quantity of nitrates, the persistence of a larger proportionate amount of the former at Winona may be easily understood.

This dilution is also indicated by the decrease in the quantity of the carbonaceous vegetable matter as the stream is followed down from Aitkin. The amount of oxygen required for the destruction of organic matter, is decidedly less at Winona and Red Wing than at the upper settlements, notwithstanding the out-put of oxidizable substances by the two large intervening cities.

The daily inflow of sewage from Minneapolis and St. Paul must be regarded as a dangerous pollution of the waters of the Mississippi River, although chemical processes fail to show its presence at the lower settlements on account of the enormous mass of water in which it is diffused. I am unfortunately unable to present in figures the proportion which the inflowing sewage bears to

the passing current, but evidently from the dilution of the inorganic salts, it must be very great. It should be remembered, however, in this connection, that dilution does not destroy the germs of disease that are present in sewage, nor, so far as experience has shown, does it impair their pathogenic activity. It merely lessens the likelihood of their presence in a particular draught of the water. The draught that does contain them is as dangerous to the individual who swallows it as though there had been no dilution.

Certain of the waters from St. Paul and Minneapolis, those marked in the table with an asterisk, cannot be considered fair samples of the river water at those cities. They appear to have been taken from near the mouth of the sewers before the occurrence of a thorough diffusion, as the chemical results obtained from them are similar to those yielded by an ordinary city-sewage diluted with three or four volumes of water.

Three specimens of ice from the river at St. Paul were found unfit for use, two of them being, in fact, solidified sewage, showing but few signs of having undergone the certain amount of purification which usually results from a gradual congelation. The specimen of Lake Como ice was decidedly inferior to that from Lake Phalen, although the latter appeared to have met with some accidental contamination, as it was less pure than the waters of the lake. Ice from Cedar Lake was less satisfactory in its character than that cut from the Mississippi at Minneapolis. The best specimen of river ice examined, was taken from near the in-take of the Red Wing water-works. The chemical characters of ice are related to those of the water from which it is formed. The worst specimen of a series of Syracuse ice samples recently examined by Dr. Willis J. Tucker, yielded only .005 of free ammonia, and .001 of albuminoid ammonia in 100,000 parts of the water, and required only .04 of oxygen for the destruction of its organic matter. But the Red Wing sample may be accepted as a fair specimen of Mississippi river ice, the slow evolution of its albuminoid ammonia being held in remembrance.

The well water from Aitkin does not give good results: it contains an excess of chlorine, and the free ammonia and nitrates indicate the proximity of the well to the source whence the chlorine was derived.

The creek above the water-works at St. Cloud contains putrescent matters of both animal and vegetable derivation; its waters are wholly unfit for admixture with that which is to be used for domestic purposes.

Of the waters from Stillwater, that from the well on the flats should not be used; that from the well in the residence portion of the city contains more ammonia than should be found in a pure well water. Lake McKusick furnishes a fairly good surface water, by no means so pure, however, as the spring water which forms part of its source.

The well at Minneapolis, if shallow, has sewage connections; but if an artesian well, as suggested by the stability of its nitrogenous matters, the excess of chlorine and ammonia would be satisfactorily accounted for.

The water of Lake Phalen is of good quality; its organic matter is vegetable and non-putrescent, as is that of Lake Vadnai. A limited excess of free ammonia, such as is found in the latter water, is not, as in the case of well waters, an indication of ureal contamination; it is a contribution from the atmosphere, and depends on recent rains or snow falls.

The artesian well at Red Wing gives a water which is organically pure, notwithstanding its chlorine and free ammonia, but its sulphuretted character renders it undesirable as a drinking supply. The water of the "Scandinavian" well contains an excess of chlorine and free ammonia, but the soil in which the well is sunk appears to act efficiently as a purifier at the present time; in other words, the water is good but the well untrustworthy. The large quantity of nitrates in one of the tap waters of this city, must be viewed in connection with an excess of iron in the water, this particular sample having been drawn from pipes that had not been in use for several weeks. The large amount of free ammonia in the Red Wing cistern water must be attributed to sooty deposits on the house-roof, as the trifling quantity of chlorine present negatives the idea of a seepage from the soil; the solids are derived from the cement lining.

Of the Winona wells, that on Wilson and Sarnia streets furnishes an unusually good water; but all the others, including that of the water-works, are of doubtful character as represented by the samples. Although containing little recent organic matter, the presence of free ammonia and nitrites indicates that sources of contamination exist in the track of the water supply. The Winona general supply should be examined from time to time to determine whether its free ammonia is a permanent characteristic derived from the area of drainage, or an accidental contamination affecting that particular sample. Lake Winona gives a water which approximates to marsh water in its characters. The Rochester well furnishes an excellent water.

In conclusion, I desire to urge upon the State Board of Health of Minnesota the desirability of continuing these investigations into the character of the water supplies of the State. In England, where the relations of the water supply to the public health are thoroughly understood, a constant supervision is exercised over the quality of city supplies, and any alteration from the normal standard is followed by an inquiry into its bearing on the wholesomeness of the water. This is as it should be. But in our country public health work of this character is only beginning to be appreciated. Minnesota does well in acting as a pioneer in this comparatively neglected section of sanitary science, in developing the natural history of the organic constituents of public water-supplies. There are seasonal variations in the quality of all surface waters. These should be determined from month to month until the normal condition of streams, lakes and other sources of general supply at any period of the year may be known from the record, and that any deviation from the normal may meet with corresponding inquiry. Chemical supervision of the quality of the surface waters will tend to preserve their purity and react favorably on the public health. The best water, so far as our present ability to discriminate enables us to judge, will always be chosen for general supplies. In time, also, the best waters will be selected for individual supplies; and many wells now in use, the unsuspected cause of continued and paroxysmal fevers, and other dangerous and disabling diseases that break out in localized epidemics, will cease to contribute to the lists of sickness and mortality. The laboratory work that demonstrates the connection between a deadly epidemic of typhoid, and a polluted water, is excellent in itself; but the objective of all sanitary inquiries is *prevention*, and this, in the case of diseases propagated by the water supply, can only be effected by a continued and general supervision which will throw out of use the dangerous waters and suggest precautions for those that are of doubtful quality, before either of them have forced themselves upon the public attention by unmistakable evidence of their character.

#### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF FEBRUARY.

##### DISEASES OF MEN.

Diphtheria.....	{ cases,	17
	{ deaths,	4
Scarlatina.....	{ cases,	12
	{ deaths,	1

##### DISEASES OF ANIMALS.

Cases of glanders remaining on hand isolated or not accounted for at first of month .....	10
Reported during the month.....	24
Killed.....	2
Released .....	0
Isolated .....	23*

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Remaining March. 1st isolated or not accounted for..... 32

\*Seventeen horses were isolated in one locality, of whom but four are known to be affected.

## IMPORTANT TO TOWN CLERKS.

YOUR terms of service expire next month. We cannot permit the opportunity to pass, to thank the large majority of your number who have so faithfully aided us in the effort to make hygiene an agent of everyday use in Minnesota, for the prevention and control of disease in man and domestic animals. If we could, we would re-elect most of you for another term—for which the experience of the last year would be a proper preparation. We can only hope that your towns have done that, and that you have accepted the service.

In any event, will you please fill out a blank, like the model which follows this notice, just as soon as you are officially informed who your successors are to be, and forward to this office:

\_\_\_\_\_

*Dr. C. N. Hewitt, Secretary State Board of Health, Sir:*—You are hereby notified that—

Name	Term of service	P. O. address
.....Chairman.	1 year.	.....
.....	1 “	.....
.....	1 “	.....
.....Town Clerk.		.....

were on the.....day of March, 1887, elected as the Board of Supervisors for the town of....., County of..... for the year ending March....., 1888.

Signed by.....,  
Township Clerk.

\_\_\_\_\_

If your township is a new one, give town and range. *Do not fail to give P. O. address of all members, and of the Township Clerk.*





# PUBLIC HEALTH IN MINNESOTA.

—THE—

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH.

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MARCH, 1887.

WHOLE NO. 25.

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**TO LOCAL BOARDS OF HEALTH:**—Referring to the report on disease of cattle in the herd of Ames, French & Co., Carlisle township, Ottertail county, in this (March, '87,) number of PUBLIC HEALTH, you are requested to make an inspection of the herds in your township. Should you find evidence of any general or suspicious sickness, call a competent Veterinary Surgeon and notify the Secretary of this Board. Keep a sharp oversight of all imported cattle, and if from outside the State require reasonable evidence that they have not been exposed to infectious disease. These precautions are necessary because of the increased movement of cattle from the States east of us to, and through, our State. In the interest of the cattle industry, let no opportunity to make your present safety doubly sure, escape you. Send for the number of circulars on Pleuro-Pneumonia you require, and distribute them freely.—[H.]

**THE THIRD YEAR OF PUBLIC HEALTH IN MINNESOTA**—Begins with this number. The venture, made with doubt, because there was no precedent for it, has become a useful and valued success. Other State Boards of Health have followed our example, and within our own borders, the field occupied by the journal is broadening every month. The entire monthly edition of 2,000 is exhausted and we are, therefore, unable to supply back numbers, even to Local Boards. As for the future, we prefer to make no promises, except the general one that the journal shall be a reflex of the work of the State and Local Boards of Health, for mutual information, and co-operation. It will also aim to present to its readers the most important of the current, sanitary, news bearing on our common work. To the increasing requests that we double our pages making the journal more popular, and better adapted to the use of the family, we reply that it shall be done, just as soon as we can be reasonably sure that the subscription list will pay the additional expense. A single paid subscription from each Local Board of Health in the State, would be sufficient to justify the venture. Shall we have them?—[H.]

**SUSPECTED INFECTIOUS PLEURO-PNEUMONIA OF CATTLE.**—On the 12th of April, a suspicious disease was reported to the Secretary by Dr. Leonard, of Fergus Falls, in the herd of Ames French & Co., six miles from that city. The herd was immediately and strictly isolated—had, in fact, been so all winter. The Secretary visited the farm on the 15th, in company Dr. James Cook, V. S., Dr. Cole, Health Officer, and Dr. Leonard, all of Fergus Falls. Up the date of this visit, since January 1st, out of 181 cattle, 11 had been

killed or died. Post mortem examinations of two of the dead, had revealed serious lung trouble. At this time Dr. Cook found 11 head ailing, and selected one, likely to die. On slaughter, the lungs were found entirely free of inflammation, nor was other cause of sickness discovered. The remaining 10 were isolated under one care-taker. They were all markedly out of condition, with temperature ranging from 103 to 104. In but two was the breathing above 20; in all the rest, after individual examination, Dr. Cook found it normal. The lungs of one of the unburied dead were examined and found healthy. Further slaughter was thought inadvisable, until more marked symptoms of local disease should appear. With Dr. Cook, the Local Board of Health took a careful inventory of the herd, and direct charge of the isolation, and oversight of the cattle and farm, so far as necessary to enable them to guarantee absolute non-intercourse with any other cattle. While we found no evidence, at this time, of any lung disease, the two post mortem examinations made, before this visit, one each by Dr. Cook and Dr. Leonard, in which inflammation of the lungs was found, left the question of the character of the disease unsettled. It is very fortunate, in view of this uncertainty, that this herd has been so entirely isolated since last October. A few cows, brought for service, are the only exceptions, and they are known to and are under the care of the Local Board of Health. The most careful inquiry shows that all the cattle were raised within the immediate district (probably within 50 miles.) and have never been in association with any other cattle. Inquiry, to include all herds in this section of the state, is now being made by the State Board, as additional precaution against any possible danger. Township Boards are requested to make this investigation in their districts, and to report immediately, any unusual sickness discovered. We repeat, what cannot be said too often, and should be constantly kept in mind, that tireless vigilance is our only safety, against the first attack of this insidious disease. We are happy to report that fewer cattle are coming into the state or passing through, without the veterinary certificate and affidavit required by this Board, than heretofore, from other states than Illinois. Local Boards will do well to demand the record of all cattle coming into their districts; from, or through, Illinois, require evidence as above; from other states, such evidence as the owner can give, is at present sufficient, but intending importers should be advised to use the same forms as are required from Illinois, thereby avoiding chances of bother and delay, which may easily occur without them, and giving us additional security against the importation of the disease.—[H.]

**PLEURO-PNEUMONIA IN NEW YORK.** Under date April 7th, Dr. Salmon, Chief of the Bureau of Animal Industry, writes in answer to inquiry of Secretary of this Board: "I do not think you are in any danger from Massachusetts any more than from any other of the northern states. We have found a small outbreak of this disease in Washington county, New York, and have an inspector on the ground, who will very soon slaughter all the infected animals."—[H.]

**RESTRICTIONS UPON THE IMPORTATION OF CATTLE INTO MINNESOTA.**—Despite all the State Board has published, there still remains a good deal of misunderstanding on the subject, among shippers of stock into, or

through, the State. Some of the railroads are not enforcing the requirements of the State Board, as they must do if they intend to continue this trade. As is well understood by all interested in the matter, these restrictions are intended to protect the cattle of this State from the infection of pleuro-pneumonia, which is not yet crushed out, in Cook County, Illinois. That infection may come in the body of an infected animal, in the hair of an animal exposed (e. g. in a stock yard) to infected animals, or it may come in infected cars. Under existing circumstances, our greatest dangers are the two first, and in the order in which we have stated them. We try to guard against them all. Veterinary surgeon certificates, with affidavits of owners, are required with all cattle coming from, or through, Cook County, Illinois, and it is advised that the same rule be followed for all cattle coming from the Eastern States. Duplicates should always be sent to this office, so that we may notify Local Boards of the date of expected arrival and save them, shippers and the railroads, unnecessary delay or expense. Circulars, forms and instructions will be sent to any asking for them, and have been sent to all railroads entering the State. Local Boards will promptly notify the Secretary of any violation of the law, or of the regulations of this Board.—[H.]

**I**MMIGRATION AND SMALL-POX.—We are informed that there will be an unusual number of new-comers from abroad this season, and experience justifies the warning which we now give on the subject. The worst outbreaks of small-pox have come to us through immigrants, their persons or their clothing. To guard against this danger, the State Board have to watch the routes by which it threatens us from without; to put the Local Boards on guard; to notify them, so far as possible, of the approach of any particular danger, and to co-operate, should the disease gain a foothold in the State.

First in importance, as preventative of small-pox, is vaccination. The rule of all Local Boards at this season, should be to call popular attention to the subject, and to offer every facility, possible, for the distribution and use of the virus. (See pps. 61—63, Vol. I. PUBLIC HEALTH.) Circulars on small-pox and vaccination, will be furnished from this office, on request. Second in importance of the duties of Local Boards, as respects the possible occurrence of small-pox, is the careful oversight of all new-comers, themselves, and their clothing, giving notice to all householders of the possible danger from these sources, and asking for speedy notice of any suspicious eruptive disease. Local Boards will save themselves, and the Secretary, much trouble and hasten the measures necessary for control of an outbreak in their district, if, in the event of such an outbreak, they will use the following rules: First:—Isolate the sick, and all exposed to them, from association with other people, and provide for the supply of their necessities by a messenger; the well, in an isolated family, caring for the sick. Second:—Notify the Secretary of this Board immediately. Use the telegraph, if necessary, but only for essential facts, for example, ("Small-pox, 2 cases, 4 exposed, all isolated. Letter mailed. John Smith, chairman Board, Tompkins. Address, Northfield.") In a letter, answer the following questions, adding any other information you wish. It will ensure quicker and more certain delivery, if you use an "immediate delivery"

stamp. This letter to be written by the Health Officer, if there be one, if not, then by the Chairman of the Local Board of Health.

1. Give name, address, and opinion of the attending physician, or if there be none, call one, the first thing, after isolation of suspected cases, and report his opinion and advice. In such circumstances select the one most likely to be competent (if the Health Officer of adjacent village or town, so much the better,) and make him your Health Officer.

2. Describe the location, number, and character of the cases, dates of attack, number of people exposed by them, facilities for the care of sick and well, and the probable danger to other people from the isolated family.

3. Be particular to get and give the history of the first case, as it very often gives a clue to danger elsewhere, and is, in other ways, of importance.

4. State if the cases can be cared for where found, or if other arrangements will be necessary, and whether you can provide them.

5. If the case is a person not a resident of your district, be careful to know if he has means for his own expenses, or if he must be a public charge, and report the facts as you find them.

6. Whether the cases are suspected, or actual, take such measures as will enable you to be positive in your assurances that any danger is amply guarded against. You will find that popular confidence is absolutely necessary in this work, and that the surest way to gain it is by quiet, efficient, and resolute work.

—[H.]

THE NUMBER, ORGANIZATION, AND DIFFICULTIES, OF TOWNSHIP BOARDS OF HEALTH.—There are, in this State, about 1200 Township Boards of Health. By the law of their organization the membership is changed every year, at the Town Meeting in March. Fortunately one, at least, of the old members is, as a rule, re-elected, and the Clerk may be retained for several years. Until this year, our returns have not been complete, but are likely to be so now. Up to date (April 14) over 900 re-organizations have been reported to the State Board, since March 10, and at the present rate the whole number will be registered in our "Record of Local Boards," by May 1. Taking thirty counties, at random, it appears that 25 per cent of the Clerks have been changed, and a still greater proportion of Chairmen, so that a large number of the Township Boards begin the, official, year with officers who have to learn their duties "from the bottom up," spending the first month, one of the most important of the whole year, in doing so. The interruption to methods, work, and records caused, in this way, is just cause of complaint. Though known to most of the members of the last Legislature, a bill to change the law, so as to leave, on these Boards, a fair proportion of the old members, failed to pass. As their duties increase in number and importance, these defects of organization will become so evident that they will be generally recognized, and their correction will be, as generally, demanded. Meantime it is a satisfaction to report that new and old Boards, alike, are more prompt in getting to work, this year than last, and the Clerks, particularly, show an interest which is an encouraging omen for the future.—[H.]



THE VITAL STATISTICS—HOW TO OVERCOME THE CHIEF OBSTACLE TO THEIR COLLECTION, which is the neglect of householders, physicians, and midwives to obey the plain directions of the law. Enough reports of births and deaths have, already, been received at this office, to show that the Township Clerks (who make eight-tenths of these returns) have never been properly instructed as to the intention and best methods of collecting, recording, and reporting them. The letters which accompany the returns, as a rule, state that upon receipt of instructions how to proceed, efforts will be made to have them correct in the future. This is the proper spirit with which to make a success of this important work, and nothing will be left undone, in our power, to aid in making that success as speedy and sure as possible. The correspondence on the subject is very large and increasing, but the questions asked, and difficulties encountered, are so nearly alike, that it seems best to make a general reply, which will reach all who have written, and every other Clerk, besides. At the outset it is necessary that it be clearly understood that *the old law was the same as this, in requiring householders, and heads of families, to make these returns to the Clerks*. Clerks, having to make their reports but once a year, fell into the habit of ignoring this requirement, and asked no returns to be sent to them; but in the latter part of December of each year, made a personal visit to every house in the township, collecting the statistics for themselves, and educating the people to violate the law, by relieving them not only of the penalty, but of the duty which the penalty was intended to enforce. The same mistake was made in villages and cities, with the same unfortunate results. If these had been useless labor and worry, to the Clerks alone, they might have been tolerable, but they involved, beside, the completeness and accuracy of the statistics themselves. They have proven so valueless that medical men, and others who look to them for important information, have asked for a change, two Governors have urged it, and the last Legislature enacted the present law. This much by way of needed explanation.

*How to enforce the Law.* (1.) Understand its provisions thoroughly yourself; get all the circulars, blanks, forms, and other helps published by this Board (they will be sent to you in any necessary quantity, free of charge, on application to the Secretary), study them carefully, and then distribute them, as required, where they will do the most good. The first difficulty will be to induce the people to *unlearn* the lesson they have been taught, and to make the returns, *monthly, to you*, instead of waiting for you to come for them, or to enforce the penalty of neglect or refusal. The clergy, if asked, will give you valuable assistance, for, as educated men, they understand the object, appreciate the necessity, and can impress their belief on others.

2. Serve a supply of the forms for returns of births and deaths, upon every physician and midwife practicing in your District, personally. Explain their duty in the matter, ask for the returns for 1887 to April 1st, and for them, hereafter, as the law directs, *monthly, to you*. Tact and courteous persistence, will correct the old habit of neglect, into which people have fallen. A postal card will often serve the purpose as well as a personal visit, and physicians and midwives are able to furnish nearly all the data, or suggest the names of those who can.

The old blanks for returns to the Clerks of the District Courts, will be



issued for returns to this office till the stock is exhausted. The new blanks will be made as compact and handy as possible, and to that end we ask for any suggestions Clerks or Health Officers can make. Meantime use only as much of the old blanks as the entries to be made, and the certificate require. It is not necessary to send the printed headings, if the entries are made, accurately, to correspond with them. It will be best to include the statistics for 1887, to April 1st, in the first report. We have no authority to state that the Clerks of District Courts will issue warrants for January and February. The Secretary of the State Board will forward them with the other reports to the proper officer at the end of the year. In reply to numerous inquiries we wish to state that, so far as practicable, the State Board will issue every form found to be necessary, for use by Local Boards. None of the forms at present in use are to be considered as fixed. They are on trial, subject to any change which will add to their usefulness. Any suggestions, based on their use, will be welcome. —[H.]

RETURNS are coming in very satisfactorily. Despite the difficulties which are unavoidable in the attempt to collect these important facts, accurately and regularly, the Clerks and Health Officers have a serious additional difficulty which will require patient persistence and tact to overcome. One would infer, from some of the letters received at this office, that the old law did not require the householder to make returns of births and deaths, but did require the Clerks to make an annual visit to every family for that purpose. One Clerk quoted the suggestion of the Commissioner of Statistics advising this violation of the law, "To effectually accomplish this it will be necessary to make inquiries from *house to house* at certain intervals, at least twice during the year." (See letter of Commissioner on back of old blanks,) as the law itself, and it was necessary to refer him to the act, to convince him of his mistake. With but two exceptions, in all the letters from Town Clerks, on this subject, the writers recognize, not only the difficulties to be overcome in showing people the right way, and persuading them to follow it, but that the fault is more with the Clerks than the people. The two exceptions served under the old law. Their letters are on file, and contain nothing which required other answer than the terms of the law, to which they are referred.

In reply to many inquiries; if householders, physicians and midwives insist on the full time allowed for making returns (ten days), delay returns to this office until the 12th of the succeeding month. We predict it will be found that physicians and midwives are as ready to report in two, as in ten, days, and if requested to do so, by their Health Officer or Clerk, will do it. Health Officers, will get from the Village or City Recorder, the Register now in use (new Registers can be obtained of the County Auditor when required,) and their supply of blanks from this office, using them as above suggested.

All interested in the subject know that, under the old method, the faults were, collection too late for greatest usefulness, or for correction, if needed, and the lack of competent medical supervision, in the arrangement and study of the aggregate returns, and their prompt and regular use in the discovery of the whereabouts, character, and severity of existing disease. The experience of this Board, and of many Local Boards during the past two years, has furn-

ished abundant illustration of this truth. It would be to much to expect that these, and many other defects of older methods, are at once to be remedied by the one now to be tried, but this much is possible, and must be aimed at, an increasing accuracy in the "cause of death" and in securing complete returns of the number of births and deaths.

Health Officers and Town Clerks will take every opportunity to give the widest diffusion to the requirements of the law as to returns of births and deaths, and to the important fact that they have no discretion than to enforce its penalties upon those who wilfully violate its provisions. To this end the State Board will furnish copies of the law, with a preface calling popular attention to it and to the advantages of a strict compliance with its requirements for free and sufficient distribution by Health Officers, or Town, Clerks who apply to the Secretary therefor, stating the number required for immediate use.

The collection of the reports for March should be taken advantage of to notify all who can be reached in that way, particularly physicians and midwives, that hereafter they must send their notifications of births and deaths in to the proper officer without further solicitation. Just as soon as the best form can be determined, every blank which will serve to diminish the trouble, or increase the value of the reports required by the law, will be furnished by the Secretary of the State Board. A little time will be necessary to do this, and the kind forbearance of all concerned is confidently asked, with the promise that the necessary inconvenience will be of as brief duration as possible.—[H.]

### INFECTIOUS DISEASES OF CATTLE.

BLACK-LEG (*anthrax*)—HOW TO RECOGNIZE IT, PREVENT, AND TREAT IT, WHEN A COMPETENT VETERINARY SURGEON IS NOT AVAILABLE.

**I**NFECTIOUS DISEASES OF ANIMALS—THEIR PREVENTION AND CURE.—Ever since the oversight of this class of diseases has been made the duty of the Local Boards of Health, there has come, with the call for help to suppress, or control, a strong call for help to cure. A very costly experience has taught us, that Glanders, or Farcy (one and the same disease), are incurable, and that animals, having the disease in any stage, are a constant source of danger to other animals, and to men, who come in contact, with them, or things which they have worn, or used. But there are other infectious diseases of animals, from which they do recover, and for which prompt medical treatment, very often means, a good chance of cure. Of this sort are the diseases which are commonly classed together as *Black Leg*. For several months reports concerning them have come to this office, and we have had the opportunity to assist at two post-mortem examinations of cattle which have died with symptoms of the disease. In all the cases reported, the attack has occurred in apparent perfect health, suddenly, and death has taken place within 24 to 36 hours after the first symptom. It is evident enough, that any treatment, to be of use, must be very prompt, and that as the vast majority of farmers live far from competent veterinary service, they ought, if possible, to have such remedies at hand, as they could use. It seems a perfectly legitimate thing for us to do, to procure and furnish, to our readers information of this character. We propose to do so, as see ms necessary, in the future. We begin, in this issue,

such information, as regards blackleg. Dr. Salmon, Chief of the Bureau of Animal Industry at Washington, writes of the disease, and of its virus, as tested by inoculation of other animals. The preventive and remedial measures which he suggests, are such as, in the absence of competent help, the farmer can use for himself. The medicines are such as every one has, usually, on hand. We call attention, particularly, to the fact that the doctor lays special stress on the use of these simple medicines, *for prevention first*, for cure after. Note also what he says about the "condition" of the animal, as predisposing to the disease.

Dr. Lambrechts, V. S., of Willmar, kindly contributes an article on the same subject, describing the disease as he has seen it in Minnesota, and entering into details of cause, prevention and cure, in a very instructive way.—[H.]

THE CONFERENCE OF STATE AND LOCAL BOARDS OF HEALTH called at the request of a number of prominent Health Officers (PUBLIC HEALTH, Vol. 2, pps. 81—81,) convened at the Ryan, in St. Paul, on Thursday, February 24th. Despite the severe snow storm and blockade of the railroads, thirty-seven delegates, representing twenty-five Boards were present. We are compelled to omit the proceedings from this number by the press of other matter which could not wait, but shall publish an abstract in our next. Four sessions were fully occupied in discussing proposed legislation, and questions suggested by the experience of delegates in local work.—[H.]

LABORATORY—WATER ANALYSIS.—The Secretary has been so fully occupied for the last month, in the other duties of the office, as to have been compelled to confine his work here, to that which was urgent. In another week he will have "caught up" again, and will begin to reply to the requests for analysis (with samples) which have accumulated during that time. Some of these analysis confirm others of older date, in indicating the existence of natural mineral waters of different medicinal properties and values, in several places in the State. The study will be continued, as opportunity offers, till a definite conclusion is reached.—[H.]

HEREWITH the State Board of Health presents a copy of the law for the collection of vital statistics, enacted by the last Legislature. It is, as will be seen, on examination, a revision of the old law, from which it differs only in the following respects: Township Clerks collect the returns of Births and Deaths as heretofore, but monthly now, not yearly, as then. In all villages and cities, of less than 100,000 inhabitants, the Health Officer collects the statistics, instead of the City Recorder or Clerk as before. The requirements as to the returns of Births and Deaths are nearly the same as before. The old law, in this respect, was a dead letter and for that, and other reasons, but that chiefly, the statistics were hardly worth the trouble, much less, the cost (about \$16,000 a year.) The Board asks the aid of all who are mentioned in the law, to make the returns, from all districts, full and accurate. To this end, please read the following hints, the observance of which will make your duty, and that of the Clerk, or Health Officer, easy. As to both returns, send in the proper blank, properly filled, within twenty-four hours. It is just as easy to do it then as at

any time later, easier, in fact, for all the items are then fresh in mind, and the Doctor (who should make the return when practicable) is at hand. Have him do this at his last visit or take the blank to him and, after it is filled, deliver it to the Clerk, or Health Officer, as the case may be. Another important point: there is not a question asked, in any of the blanks, the answer of which is not of value, and necessary to the return. The question is often asked: What is the use of these returns of Births and Deaths? It would take a volume to tell all the uses which they serve. For every district they furnish the figures for the calculation of its average death rate, and (with the returns of infectious disease,) they enable us to calculate average healthfulness, and to trace out causes of ill health, with a certainty attainable in no other way. They constitute a permanent record of important facts, open to all, and often are necessary legal evidence of property, and other rights, in the courts. It is, when united to like returns, from every other township, village, and city, of the State, in the office of the State Board, that the averages are ascertained, bearing upon the every day work of Boards of Health. These are to be published in *Public Health*, the monthly journal of the Board, so as to be available for any one who chooses to use them. The data so obtained, over large territories and long periods of time, are the basis for the calculations of life insurance tables, and in no other way is their value better proven. But their greatest use for us will be found in the light, which their study, will throw upon the causes of our common sicknesses, and the hints they will give as to where to search, with greatest likelihood of finding, for the sources of ill health, which as everyone knows, disables more people than actual, bed-confining, disease. For these reasons, and for many others which will suggest themselves, the Local Board of Health asks for the hearty support and steady co-operation of every citizen.

The law requires that returns of Births and deaths be furnished to the *Clerk or Health Officer*, as the case may be. He is not required to go, or send, for them. The blanks for these returns can be obtained of the proper officer. Upon each will be found the directions for its use. The Clerk, or Health Officer, has no alternative than to enforce the penalties of the law, if any one compel him to do so.—[H.]

### CORRESPONDENCE.

#### BLACK-LEG.

WASHINGTON, D. C., April 7, 1887.

"Dr. Chas. N. Hewitt, Red Wing, Minn.

'Dear Doctor:—Yours of the 4th inst. at hand. The blackleg virus, which you sent, was used for the inoculation of some animals, one or two of which died, but not of blackleg. The material seemed to contain the germs of malignant oedema of which the animals died. From your description of the disease in Minnesota I believe that it was true blackleg because of the emphysema of the cellular tissue. In our cases here this condition did not exist.

"Blackleg is prevented with considerable success, by giving the animals, in the affected herd, medium doses of saltpeter and sulphur; some combine these with the salt that is used in salting the animals. The idea of the treatment has always been, to reduce the condition of the animals, since it is only the animals which are in a thriving condition that are affected. Some give purgatives, others bleed, and still others put a seton in the dewlap. I am not aware that these measures are more successful than saltpeter and sulphur.

"Very respectfully,

"D. E. SALMON, Chief of Bureau of Animal Industry."



## DIPHThERIA.

WABASHA, Minn., Feb. 17th. '87.

MY DEAR DR.—With regard to the Diphtheria that prevailed in three families in town of Glasgow, this county, as the town authorities appointed me to attend to it, I have concluded to report to you. All are now well and the school is opened; the scare has abated.

The case occurred in the house of John Lilly, town of Gasglow. A girl was taken with lung fever, aged 16 years. In the second week she was taken with a very malignant diphtheria, and died. No other case in family. A boy aged 24, died suddenly with heart disease, and not diphtheria.

1st. One case in Lilly family, one death.

2d. Henry Funk, a neighbor, one mile from Lilly, two cases. No deaths.

3d. John Gisler, also one mile from Lilly and Funk, also a German family, four cases. Two deaths, aged 9 and 12 years.

Recapitulation—Three families, all German, did not spread over a mile in any direction. Number of deaths three; died of other diseases one.

The great difficulty in these cases was the imprudent way in which the families who had the disease, visited around. But you will see that it did not spread, and was very limited; scarcely attacked any but the immediate neighbors. The excitement is all over with. It will have a good result in showing town boards the necessity of organization for health purposes.

Respectfully,

F. H. MILLIGAN. M. D.,

Health officer Town of Glasgow.

BLACK-LEG (ANTHRAX FEVER).—This disease occurs, usually, in young animals—18 months to 2 years. It often kills suddenly, though, generally, there are some indications of its progress. The victim, which before the attack, has generally been thriving, gaining rapidly in flesh, and often considered to be the best in the herd, becomes lifeless; has a vague expression about the eyes; ears are heavy and pendent; the loins, ribs and flanks are tender; the pulse becomes irregular, feeble, and rapid—from 80 to 120; the mouth hot and dry; and the conjunctiva (lining membrane of the eye,) is very much reddened. Very soon swellings form about the loins, back, neck, head, brisket, or upon one or more of the limbs, in which case the animal is lame. At all times there is an unwillingness to move about, it seems stiff and rigid in the limbs; lies down and is unwilling to rise. Appetite entirely lost, rumination suspended; bowels constipated; and the urine scanty and high colored, sometimes dark or coffee colored. The swellings are not very sensitive to the touch; on pressure are cold, and if the disease is of a few hours duration, will crepitate (crackle) when handled. Debility increases rapidly, the prostrate animal is unable to rise; convulsions may occur; it is unconscious; eyes are starting, countenance vacant, and the creature dies in coma, or from sheer exhaustion, with scarce any visible nervous disturbance. The swellings under the skin contain serum and extravasated blood, which speedily decompose, forming gases and causing the crepitating sound before referred to. In some cases there are premonitory indications of some disease, before the intense symptoms above described are developed. Thus in a herd, in which there have been one or more deaths from black-leg, others are found which are unthrifty, loose flesh, are hide-bound, with arched back, stiffened movements, and elevated temperature. There is capricious appetite, irregular rumination, and bowels, with high colored urine. The skin is harsh and covered with spots. If, in these cases, the diet is neglected, and no remedial precautions be taken, the graver symptoms occur and the animal dies.

*Cause*.—Black-leg is most prevalent on rich, undrained, low land, and on naturally dry soil, in damp seasons, with high temperatures. Too high, or too scanty food; too warm, and badly ventilated, stables, and in most cases, too little exercise, in the winter season, are the cause of the disease.



*Treatment*.—When the symptoms are fully developed, little good can be effected by medical or surgical treatment. Occasionally a case may be amenable to treatment. Locally the swellings may be fomented with hot water, and dressed with carbolic oil. (1 part carbolic acid, sweet oil 4 parts.) If the parts are already gangrenous, it is of course useless to apply anything to what is already dead, but the surrounding structures may be stimulated with equal parts, liq ammonia, turpentine, and olive oil. However, the local treatment is of secondary consideration, as the swellings are the result of an altered condition of the blood, and it is to restore the physiological condition of this fluid that remedies should be directed. In this disease the blood is fluid, dark, coagulates imperfectly, the elements of fibrin are in diminished quantity, or in an altered condition. How is the viscosity of the blood to be restored? Direct experiment upon the blood removed from the body, and the treatment of hemorrhagic diseases have, very satisfactorily, shown that chlorate of potassa has a peculiar effect in this direction. For young stock the following draught: Take potassa chlorate 3 drams, water 1 ounce; mix and give three times daily. Beside, the animal should, if possible, be exercised for half an hour daily.

*Preventive Treatment*.—It is an undoubted fact that the introduction of a seton (rowel) is a very effectual preventative of anthrax, and its operation is explained by the fact that in inflammation, artificially produced, or otherwise, the coagulating properties of the blood are increased. The safest and quickest way of inducing artificial inflammation is by inserting a seton deep in the breast, and in order to increase the irritation, it should be dressed once a day, with equal parts of turpentine and tincture of cantharides. In addition chlorate of potash should be given in doses of from 1 to 3 drams three times daily. The excretory organs must be helped in performing their proper functions by small doses of salt and ginger. The animal should have easily digested food, and tonic medicine, as preparations of iron, ginger, and gentian. It should be kept in warm and well ventilated stables, on high, dry and well drained ground, and the young stock should have daily exercise.

B. LAMBRECHTS, V. S.

WILLMAR, Minn., April, 1887.

#### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF MARCH.

##### DISEASES OF MEN.

Diphtheria.....	{ cases, 20
	{ deaths, 3
Scarlatina.....	{ cases, 22
	{ deaths, 0

##### DISEASES OF ANIMALS.

Cases of glanders remaining on hand isolated or not accounted for at first of month .....	32
Reported during the month.....	7
Killed.....	7
Released .....	15*
Isolated .....	4
Remaining April 1st isolated or not accounted for.....	17

\*One of this number was stolen from isolation, and Local Board of Health, after thorough search, have been unable to trace the animal, but have discovered the party who probably took it, and will enforce the penalty of the law.

## An Act to Provide for the Collection of Vital Statistics.

*Be it enacted by the Legislature of the State of Minnesota.*

**SECTION 1.**—The Clerk of each town, and the Health Officer of each village, borough or city in this State, shall obtain and register the following facts concerning the births and deaths occurring therein, separately numbering and recording the same in the order in which he obtains them, designated in separate columns, viz: In the registry of births, the date of birth, the name of the child (if it have any), the sex and color of the child, the names and places of birth of the parents, and the date of the record; in the registry of deaths, the date of death, [the name of the deceased.] the sex and color, the condition, whether single, widowed or married, [the age, place of birth,] the names and places of birth of the parents, the disease or cause of death, and the date of the record. The County Auditor of each County shall furnish each clerk or Health Officer within his County, at the expense of the County, a book in which to register the facts concerning the births and deaths as above provided. Provided, however, that in cities of over 100,000 inhabitants, where the duties hereby imposed upon the Health Officer, have heretofore been imposed upon the City Clerk, the latter shall continue to perform the same and receive the compensation therefor.

**SEC. 2.**—Parents shall give notice to such Clerk or Health Officer, of the births and deaths of their children; every householder shall give like notice of every birth and death happening in his house; the oldest person, next of kin, shall give such notice of the death of his kindred; the keeper, or other proper officer, of every workhouse, poorhouse, reform-school, jail, prison, hospital, asylum, or other public or charitable institution, shall give like notice of any birth or death happening among the persons under his charge. Whoever neglects or refuses to give such notice for the period of ten (10) days after the occurrence of a birth or death, shall forfeit a sum not exceeding twenty (20) dollars, to be collected as other fines are collected by law.

**SEC. 3.**—Any physician having attended a person during his last illness, shall, within ten (10) days after the decease of such person, furnish for registration to such Clerk, or Health Officer, a certificate of the duration of the last illness, the name of the deceased, his age, the disease of which the person died, and the date of his decease. And any physician or midwife having attended a case of confinement, shall, within ten (10) days thereafter, furnish for registration to said Clerk or Health Officer, a certificate of the date of birth, sex and color of the child, with the names, dates and places of birth of the parents. If any physician or midwife neglects to make such certificate, he shall forfeit the sum of twenty-five (25) dollars, to be collected as other fines are collected by law.

**SEC. 4.**—Such Clerk, or Health Officer, shall, on or before the fifth (5) day of each month, transmit to the Secretary of the State Board of Health and Vital Statistics, upon blanks to be furnished by said Board, a certified copy of the registry of births and deaths which have occurred within such town, village, borough or city, during the calendar month immediately preceding. For obtaining, registering and returning the facts herein required, such Clerk or Health Officer shall be entitled to receive from the County Treasury of his County, twenty-five (25) cents for each birth or death so obtained, registered and reported. And for neglect to perform such duties as herein required, he shall forfeit a sum not exceeding fifty dollars for each offense, to be collected as other fines are collected.

**SEC. 5.**—It shall be the duty of the State Board of Health and Vital Statistics, to prepare and furnish to such Clerks and Health Officers, suitable blanks and instructions for the making of the returns herein provided for. And the Secretary of said State Board of Health and Vital Statistics, shall, annually, on or before the fifteenth (15) day of January, of each year, transmit to the Clerk of the District Court, of each County, all of the said returns received by said Secretary from such Clerks or Health Officers, in such County during the year ending on the last day of the preceding December, together with his certificate showing the aggregate number of births and deaths so reported in such year by each such Clerk and Health Officer.

**SEC. 6.** The said Clerk of the District Court shall thereupon file the said returns so to him transmitted, in his office, and shall also issue to each such Town Clerk and Health Officer a certificate showing the amount due to them respectively, for the obtaining, registering and reporting the births and deaths aforesaid, as the same may appear from the said certificate of said Secretary of the State Board of Health and vital statistics. For all his said services, such Clerk of the District Court shall be entitled to receive from the County Treasurer of his respective county for recording such births and deaths, and making such abstract thereof as he may by law be required to make the sum of ten (10) cents for each such birth or death. And for his failure to perform any of the duties herein provided for such Clerk of the District Court, shall forfeit the sum of fifty (50) dollars, to be collected as other fines are collected.

**SEC. 7.**—The County Auditor of each County, upon the presentation to him of the aforesaid certificate of the Clerk of the District Court of his County, shall issue and deliver to each Clerk and Health Officer, respectively, his warrant upon the County Treasurer for the amount in said certificate stated to be due to such Clerk or Health Officer, and the County Treasurer upon the presentation of such warrant, shall pay the same to the person entitled thereto out of the general funds of the County Treasury.

**SEC. 8.**—To cover all Clerk hire, stationery and incidental expenses of the State Board of Health and Vital Statistics, under this act, the sum of one thousand (1,000) dollars shall be and hereby is annually appropriated.

**SEC. 9.**—Sections 81, 82, 83, 84 and 85 of Chapter six (6) of General Statutes of 1878, and all other acts and parts of acts inconsistent with this act, are hereby repealed.

**SEC. 10.**—This act shall take effect and be in force from and after its passage.

Approved March 8th, 1887.

# PUBLIC HEALTH IN MINNESOTA.

—THE—

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LOCAL BOARD OF HEALTH ORGANIZATION, reported to this Board since the 8th of March, and up to date of going to press, (May 17,) gives an interesting view of the sanitary organization of our State. There have reported to the State Board, as fully organized and ready for work, 1,076 Township Boards, and 154 Village, Borough, and City Boards. There are in the whole State about 186 villages, boroughs, and cities, and 1,271 townships. There should be, therefore, under the law, about 1,457 Local Boards. We are in official relation with 1,230, so that 227 are still lacking (32 village, and city, and 195 townships) to make our organization so complete that every centre of population, and every township shall have its own Board with the same rights, powers, and duties, and standing in common relations to the State Board, and to other Local Boards. These lagging ones are slowly "coming into line," so that we hope to report, "all present or accounted for," next month.

The membership of these Boards averages three, so that there are officially related to the work of public hygiene in our State, at date, 3,690 men, of whom 1,230 are executive officers, always on duty, and ready to respond to any call within their own districts, or from the State Board.

## THE MAY INSPECTION OF CITIES, VILLAGES AND TOWNSHIPS.

COPIES of all the laws, and the suggestions of this Board, have already been furnished to Local Boards of Health. An abstract of the laws will be found in this number of PUBLIC HEALTH. We ask all concerned to read it carefully. If after reading it and doubt is felt, write for an explanation, or any assistance we can give. It is no longer necessary to demonstrate to Local Boards, or to Health Officers, the advantage or necessity of the annual inspection, or of the work which it shows ought to be done. No one disputes the general proposition, yet the number who insist upon its thorough performance, is not as large as it ought to be. Experience has shown that in proportion to the thoroughness of the inspection is the thoroughness of the sanitary work of the warm season which follows. The reason is not far off, for where is intelligent and efficient work to find a guide if not in a knowledge of its necessity, derived from a careful study of the sanitary needs of the place, where the work is to be done? A very common mistake, not always confined to non-professional people, is to suppose that clean streets and alleys are sufficient evidence of the cleanliness of a city or village, and a still more serious mistake is to infer, on the same evidence, that houses, and residence lots, are clean, or that places of business or trade are what they ought to be, in a sanitary sense. We all know better, and yet how common it is to speak and act as if it were so. Streets and alleys may be models of neatness, while well known causes of ill-health may abound in all the places mentioned. It is this fact which we are bound not to let people forget.

*The central fact of all sanitary methods, in centres of population, (whether a single family, or many,) is the constant presence of decomposing animal or vegetable matter where it is a persistent menace to the purity of the air, water,*

or food supply of men, women and children. Outside the waste products of business or manufacture, these dangers centre most in the common receptacles of such matter—the privy and cess-pool. Common experience, and the results of scientific study of the relations of these things to disease, prove them often direct, and always important. They are easily accessible, and may be prevented or controlled. Left to the individual owner they are rarely disturbed, the rule being when one is full to bury, and dig another alongside or adjacent, and go on as before.

All other artificial sources of danger to air, or water, supply are directly related to these. To discover, regulate, or suppress, them is therefore the main purpose of a sanitary survey, as of routine sanitary work. Make them harmless and you have removed the most constant of dangers, and discovered the source of others, not before suspected,

On another page is a diagram, showing how a sanitary survey has been repeatedly recorded by Local Boards. Its foundation is a transcript, of village or city survey, (one block or more, to a page of letter paper), on which by, the use of a simple series of symbols, as suggested, a clear and accurate registry of the sanitary condition of the territory included may be made. The other pages of each sheet being used, as need be, for other notes.

Any Health Officer who will complete this survey once, and make this record has rendered his future surveys easy, and so systematized his work that nothing essential can escape him. In case of the outbreak of disease in any locality, a moment suffices to give him the salient points of its sanitary condition; its relations to other districts; the population; its character and other essential data, and he can lay his plans for its control, promptly, and with confidence. It is not essential that the whole of a township, village or city, be plated, as here advised, at once, but unless it is done, there will be no available record of sanitary needs and work, so convenient, at hand, and there will be increased liability to forget or neglect, *till too late, to prevent disease, which, it must never be forgotten, is the end of a Local Board of Health.* Foreknowledge of sanitary condition is the most important of the factors of disease prevention.

THE CATTLE DISEASE IN CARLISLE, OTTER TAIL COUNTY, is rapidly disappearing. The order of isolation was withdrawn by the State Board of Health on Monday, May 2d. The barns have been thoroughly cleaned by the removal of manure, white-washing walls and ceilings with quick-lime, the cleaning and protection of the well from surface drainage in the future, the better drainage of the yards, and the adoption of other sanitary precautions. The well cattle have been separated from the ailing; crowding has been stopped, better food and water furnished, the sick animals have been curried daily, and had other special care, food, and medicine. The owners have responded promptly, and cordially to these suggestions, and helped very materially in the search for the causes of the sickness and mortality of the herd. The conclusion of the matter is this: The new additions to the herd went into winter-quarters in very poor condition; were crowded into close and insanitary quarters; had insufficient food; bad water and not the best of care. Beside these predisposing causes of sickness, many were with calf. Their ailments were such as would naturally follow from such conditions. Extreme exhaustion characterized all the cases, with marked emaciation, though in many of them a ravenous appetite persisted up to death or slaughter. Abortion was frequent before death. After isolation, post-mortem was had in all cases of death by disease, or slaughter; but it developed no sufficient cause of death, or of, probably, fatal disease. The lungs once or twice contained a few specimens of lung worm, (*Strongylus Elongatus*, we suppose,) and in the last one examined was a deposit, in the lower extremity of the left lung, strongly suggestive of tuberculosis, a not unlikely occurrence, under the circumstances. The report of Dr. James Cook, M. R. C. V. S., who was the local veterinary adviser of this Board, will be found on another page.

The lesson for cattle raisers is the old, but constantly forgotten one, that



cattle are as seriously affected by unhealthy conditions, as are men, and must have as careful and intelligent care, in a sanitary sense, for the best results.

CHOLERA threatens to invade the United States from Central and South America, coming up the western coast, most likely. It is very difficult to estimate the danger from this source. It may not be very great. The fact that the disease has crossed the Atlantic, and affected a lodgement on this continent, is serious enough. The only authority which can deal with it, under existing circumstances, is, we suppose, the Marine Hospital Service, which has control of the epidemic fund. Can any one tell why competent men are not now on duty in the infected Central, or South, American States, not outside their borders, watching the progress of the disease, as affecting this country? The necessity is, at least, as great as to send a medical man abroad to study cholera in Europe and Asia last year. It would be wise, perhaps to send Dr. Shakespere to test his conclusions by actual trial in these American infected districts, as Dr. Sternberg is now doing for yellow fever. Perhaps a competent physician might be attached to our embassies in the infected countries, to serve for this purpose. Whatever the plan, it is a simple and necessary precaution for our Government to take.

CHOLERA AND CHOLERA INFANTUM.—Whether Asiatic cholera visits our State or not this summer, Cholera Infantum surely will, and inflict a mortality which the other disease has never caused, or is ever likely to cause, among us. Both diseases are usually associated with foul water supply, and other insanitary conditions. Both can best be forefended by the same measures—a thorough sanitary inspection, and an active campaign against everything which that inspection shows to endanger the purity of the public or private water supply of our population. Let the May Inspection, and the sanitary work, of this summer, be the evidences of the faith and intelligent zeal of our Local Boards of Health. With reasonable efficiency, the results will appear in the diminished death returns, and the increased health, and happiness of the people.

The plan for making and recording the May Inspection, on another page, has stood the test of actual trial, better than any other which we know, and besides, it provokes to *thoroughness* a very essential element for success.

THE ATTENTION of Health Officers and Clerks is particularly asked to the following statements, answering many inquiries, in the hope that they will be remembered hereafter:

1. *The Statistics of Births and Deaths must be collected every month.* There is no power given, in the law, to this Board, or to its Secretary, to excuse any Health Officer or Clerk from this duty. The first object of the collection, monthly, is, (as has been repeatedly stated,) to know, promptly, the character, locality, and fatality, of existing diseases, the lack of which knowledge has, more than once, resulted in epidemic prevalence, which, if prevented, would have saved life, suffering, time, and money, to individuals, families, towns and the State. In Massachusetts this collection is made weekly. The results, which have already been secured in many towns, villages and cities in Minnesota, are sufficient evidence that our monthly collection will soon be, almost completely, successful.

2. *The old form for "annual report to the Clerk of Court" is being used for the monthly return* to this office, till the supply is exhausted, when a new blank, exactly adapted to our wants, will be issued.

3. *It is a waste of paper, and a very clumsy thing beside, to use one of those (almost blank) sheets for reporting, say, three deaths, or as many births, when a strip (of six lines in length) across the sheet, will serve the purpose better, and make a handy envelope-full, too.* No need to send the printed head of the blanks to this office, send only the entries in the proper places of each class, with your certificate that they are full and true, to the best of your knowledge and belief.

4. *All the entries called for by the law must be made in the proper space.* If for any good reason, this cannot be done, the reason must be stated. This is necessary, as all the data, called for by the law, are important parts of the record. To omit one is, by so much, to make the return imperfect, and to increase the difficulty of its use in comparison with others of the same kind.

5. *The register, to be kept in the office of the Local Board, is the same one as was used under the old law.* It should be used till full, when by section one, of the law, it is the duty of the County Auditor to furnish a new one.

6. *The certificate of the Health Officer, or Clerk, is a part of the returns to this office.* Some Clerks have been so careless as to send them without signature.

*All defects which cannot be remedied in this office, compel either the return of the report to the sender, or a letter of inquiry.* Either of these are as much a tax on our time as on that of the returning officer. A little care in making up the returns will save time and trouble.

The following opinion of the attorney general is published for the benefit of villages having no physician to serve as Health Officer:

STATE OF MINNESOTA,  
Attorney General's Office, }  
ST. PAUL, April 22d, 1887. }

*Charles N. Hewitt, M. D., Secretary of State Board of Health.*

*Dear Sir:*—Your favor of the 21st, inst., is received. In cases where there is no physician to serve as Health Officer, it is proper that the village clerk, or other person selected by the Board, should serve until such time as a physician who, by residence, may be qualified for the position, can be had to fill the office; and this would be the proper course to pursue in the case under consideration.

Yours Respectfully,

MOSES E. CLAPP,  
Attorney General.

#### REPORTS OF CATTLE DISEASES.

DR. COOK, ON OUTBREAK AT CARLISLE, OTTER TAIL COUNTY.

FERGUS FALLS, Minn., May 14th, 1887.

*Dr. C. N. Hewitt, Sec. State Board of Health.*

*Dear Sir:*—According to instructions received from you on April 13th, I went to the Ames & French farm in the township of Carlisle, to inquire into an outbreak of disease in their herd of cattle. I was informed that H. C. Leonard, M. D., had made a post mortem on a three-year-old heifer that died on the 12th. The herd consisted of 181 head, including yearlings, two and three years old, heifers and cows. The young stock was purchased, and raised, in this and the surrounding counties. The sickness commenced amongst a lot of fifty that had been wintered in a straw barn, and were very much emaciated and in very poor condition. The first one died on the 26th of January, and they kept dying at the rate of one or two per week. I made a post mortem on a two-year-old heifer, to determine, if possible, the cause of death. I found all the organs healthy, except the lungs, which showed traces of sporadic pneumonia, but Mr. Brown, the superintendent of the farm, said they were not like the lungs examined by Dr. Leonard. Immediately on my return I called on Dr. Leonard to get any information he could give me, and from his description of the lungs and pleura I feared it might be pleuro-pneumonia. I wired you to that effect and in answer received a telegram to meet you at Fergus Falls on the 15th. On that day I went to the Ames farm with you, Dr. Cole, (Health Officer) and Dr. Leonard. We made a post mortem on a heifer, but found nothing wrong with the lungs. In view of the unsatisfactory existing circumstances, you ordered Local Board to quarantine the farm, and myself to make an individual examination of the herd, and separate the apparently well ones from the sick, and also to make post mortem on all cattle that died, which I did, but failed to

find any one affected with pleuro-pneumonia. In looking about for the cause of this outbreak, the buildings and water supply were thoroughly examined; the well from which they were furnished with water, was found to be the receptacle, through improper drainage, of a great deal of the surface water and liquid manure, which, together with improper food, and exposure to the severe, changeable weather, was quite sufficient to cause the diseased condition. On April 30th, I received a telegram from you, making an appointment to meet Dr. Trombower and yourself, and proceed to the farm. Dr. Trombower made post mortem on a heifer that had died on the previous evening, and said that there was no pleuro-pneumonia to deal with, but the effects of a severe winter on a lot of debilitated young stock. I may here state that the sick ones continue to improve, and the rest of the herd apparently healthy and thriving.

Believing that further comment is unnecessary, the above is respectfully submitted.

JAMES COOK, M. R. C. V. S.

### CORRESPONDENCE.

ST. PETER, Minn., May 14th, 1887.

*Dear Doctor:*—Yours of the 11th, requesting facts as to report of two deaths from spinal meningitis, in Cleveland township, Le Sueur county, received. In reply, would say that the J. baby was, from birth, deformed, viz: cleft palate, hair-lip and spina bifida, being the deformities. The symptoms were simply those that are present in cerebro spinal meningitis. When Mr. J. asked me, or perhaps I filled out the blank myself, I simply omitted "cerebro."

In regard to the R. case, the history is about as follows: He had been in town the day he died; was evidently taken sick on his way home. When his team reached his house, he was found unconscious, and he had vomited a large quantity of grumous matter. He being unconscious, nothing could be learned from him. He had been insane and in the hospital about four years ago; was not a drinking man; was a hard worker, &c. I fail to recollect anything that would lead me to think he had any spinal trouble.

Yours truly,

DR. C. N. HEWITT.

D. B. COLLINS, M. D.

### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF APRIL.

#### DISEASES OF MEN.

Diphtheria.....	{ cases, 3
	{ deaths, 14
Scarlatina.....	{ cases, 44
	{ deaths, 10

May 1st, at date.

*Measles*, of mild type, prevailing generally throughout the State.

*Scarlatina* exists in Chatfield, (v.) Fillmore Co.; Blooming Prairie, (v.) Steele Co.; Cannon Falls, (v.) Goodhue Co.

*Diphtheria*, at New Ulm, Brown Co.; Waverly, Wright Co.; Collinwood Tp., Meeker Co.

#### DISEASES OF ANIMALS.

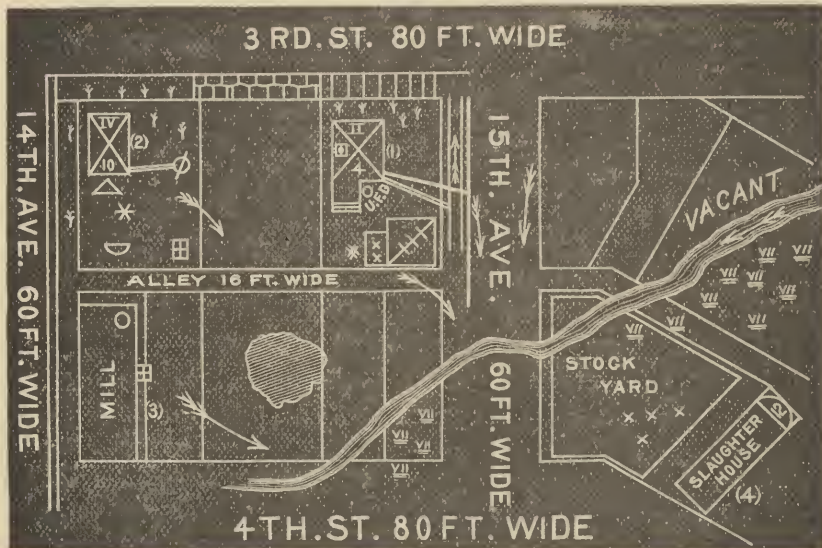
Cases of glanders remaining isolated or not accounted for.....	17
Reported during the month.....	10
Killed.....	4
Released.....	7

Remaining May 1st isolated or not accounted for..... 16

# MODEL OF A PLAT.

To be used in making and recording a sanitary survey of a farm, lot or block (as the case may be), as parts of a township, village or city survey. (The signs illustrated and described below, enable the record to be made with the minimum notes.)

No. OF PLAT. ....



1. House; Roman numeral, (*e.g.*, II) indicates adult population. Arabic, (*e.g.*, 4.) child population, Number in parenthesis, (*e.g.*, (1) ), reference number of house.
2. Well; if used for drinking purposes, mark u. f. d.
3. Water or earth closet.
4. Privy, with ordinary vault; see 23 below.
5. Cistern; if used for drinking purposes, mark u. f. d.
6. Cess-pool and drain from house.
7. Garbage heap.
8. Barn; marks on diagonal indicate horses and number of same.
9. Shed; marks indicate cattle and number of same.
10. Manure heap.
11. Pig pen; numeral, (*e.g.*, 9,) indicates number of occupants.
12. Plank sidewalk.
13. Stone, brick or concrete sidewalk.
14. Water main and connection with house; arrow indicates direction or flow.
15. Sewer and connection with house; arrow indicates direction of flow.
16. Swamps or wet ground.
17. Flowing stream.
18. Stagnant pool.
19. Trees.
20. Arrow indicates direction of surface drainage.
21. U. F. D., used for drinking purposes.
22. Ft. D. followed by numeral, indicates number of feet deep.
23. W. T., means water tight.



## NOTES OF MODEL PLAT.

(1.) Two adults, four children.

*Water closet*—Clean and odorless, and drain to Sewer perfect.

*Water supply*—City, for other domestic use than drinking.

*Well*—Used for drinking; not measured (should be). Water good: well, cemented to bottom.

*Cellar*—Clean and light.

*Barn*—Three horses, and clean.

*Cow shed*—Two cows, and clean.

*Manure heap*—Large, and to be removed.

(2.) Four adults, ten children. Cess-pool a "hole in the ground," covered. Endangers well of (1) and must be made water tight, and regularly cleaned, or better still, a connection made with sewer.

*Cistern*—Well made, brick filter; water clean and good.

*Garbage*—To be removed.

*Privy*—"Hole in the ground" to be cleaned, and filled, and, a water tight, surface tank substituted.

(3.) *Mill*—Clean. Privy "hole in the ground" and foul. (Order as in No.

2.) In adjoining lot is a shallow pool to be drained into creek.

(4.) Slaughter house and stock yard, twelve hogs and four steers, fairly clean, but to be moved to another place because of the low level of the soil and the fouling of water and air.

*Alley*—Clean. Streets in good condition except where Fifteenth avenue crosses creek. Should be filled so that creek is confined to its bed. As a natural outlet for surface drainage, creek should be protected from pollution.

*Vacant lots*—Clean and in grass.

*Plank walk*—Rotten and to be repaired.

*Disease prevalence*—Scarlatina by infection in (1) last summer; isolation; disinfection; recovery. No spread.

These notes illustrate the use of a plat, and the advantage of a simple set of symbols in the rough sketch which is used for "field" notes in sanitary surveys. In making the transfer from note book to the permanent record (after many experiments), I suggest the using *one sheet of letter paper* to each plat. The *first page* to contain No. of plat and brief description of it; next enter on same page, the *date* and *sanitary results* of the inspection. Below this, leave space for records of subsequent dates and results. The *second page* to contain the plat of the lot, block or grounds in question, as in the model. It is not necessary to draw this to scale; measurements may be made as need be. The symbols make a full record easy, without crowding the spaces. *Data liable to change*, (as No. of inhabitants in house or barn and the like), may be made in pencil, and easily changed at next inspection, if need be. *Pages three and four*, to be used for notes, best arranged *in order* as above, and in a settled order, too, facilitate easy comparison of the records.

These sheet records so made, should be bound into a volume and paged. *Two indexes*, one before, for finding the record of any given plat; one behind, for a "sanitary order" and "disease prevalence" reference. These make the record complete.

*THE MOST IMPORTANT POINTS TO BE LOOKED AFTER IN THE  
ANNUAL INSPECTION.*

1. The number, construction, condition and location, of all privies cess-pools or other collections of fluid or semi-solid, filth.

2. The location and character of all other collections of refuse, animal or vegetable matter, now, or likely to become, a nuisance or cause of sickness.

3. The location and construction of wells and cisterns; their condition, and that of other sources of water supply, for public or family use; the source of the water, and in case of disease, or reasonable suspicion of its qualities, its examination. Springs and wells are to be studied, particularly with reference to 1 and 2. (In all cases of suspected disease from the use of a water, a sample will be examined for the local board, at the Laboratory of the State Board, by the Secretary, free of expense, except for collection, containers, and express charges. Apply to him for the necessary blanks, and instructions).

4. The character, capacity, construction, and efficiency, of all drains, sewers, or other apparatus or methods of disposing of slops and other fluid refuse.

5. The condition of lots (inhabited or not), streets and alleys, as respects drainage and cleanliness.

6. The location of all trades or employments, "dangerous to the public health, or a nuisance; or attended by noisome or offensive odors, or otherwise injurious to the estates of the inhabitants". (Chapter 222 Laws 1885). Please report particularly, the number, character, and condition, of these trades. The condition of stock-yards to be carefully investigated.

7. The care and diseases of domestic animals, the condition of the barns, sheds, or pens, occupied by them, and any other facts bearing upon public health, for example, milk supply, condition for slaughter, of animals intended therefor, infectious disease, etc. (Chapter 200 Laws 1885).

8. The public disposal of night soil, garbage, offal or other vegetable or animal refuse.

9. The condition and efficiency of the public water supply.

10. The same facts as to the public sewer system.

11. The sanitary condition of buildings used for public assemblies, particularly school houses and places of amusement.

12. Sanitary condition of hotels, common boarding, and tenement, houses, hospitals, poor houses, jails, lockups, livery stables, railway station houses, and stock yards.

13. Stagnant pools, swamps or marshy lands adjacent to residences, or liable to affect, injuriously, the public health.

"It shall be the duty of the Health Officers (if there be none, then of a person appointed by the Local Board of Health to serve till a physician can be obtained.) to make once in each year, in the month of May, and oftener if necessary, a thorough sanitary inspection of said town, village, borough or city, and present a written report of such inspection at the next meeting of the Board of Health, and he shall forward a copy of said report as soon as rendered, to the State Board of Health. (Chapter 132, Laws '83, as amended by Chapter 4 Laws 1885).

By order State Board of Health,

CHARLES N. HEWITT, M. D.,

Secretary and Executive Officer.

# PUBLIC HEALTH IN MINNESOTA.

—THE—

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WHOLE NO. 27.

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**LOCAL BOARD OF HEALTH ORGANIZATION.** This very important branch of our work stands, now, as follows: *Township Boards*, 1,116 organized and at work, leaving 162 not reported. *Village, Borough, and City Boards*, 167 reported and at work, leaving 33 not reported. These organizations represent living, active, executive bodies, with an average membership of three representative men in each Board, making an aggregate of 3,849 men, directly responsible for the enforcement of the laws of the State, and the additional regulations of each locality; for the preservation of health; the prevention of infectious diseases of men and animals; the protection of the private, and public water supply; the regulation of dangerous and offensive trades; the collection and collation of the Statistics of Births and Deaths, and other incidental duties growing out of the multiple relations of the work.—H.

**NOTIFICATION OF INFECTIOUS DISEASE.** The blank for this report, to Health Officers, and clerks, (Form 1, Infectious Diseases of Men,) has already been sent a few Boards. A copy will be found in this number of **PUBLIC HEALTH**. The proper officers will please call for the number they are likely to require, and, on receipt, supply the public institutions and each physician practicing in their districts with them, calling attention to the requirements of the law, plainly printed on each blank. Seethat in all cases reported to the Board, a blank is properly filled and filed in the office of the Board. Form No. 2, for report to this Board, will soon be issued, for the use of Local Boards.—H.

**MICRO-ORGANISMS, THEIR DISTRIBUTION IN THE ATMOSPHERE.**—It is now well established that these minute organisms are in large amount in the air of the open, and in the air of the house. They are chiefly vegetable in character, and origin, and, as a rule, are not specific in their relation to disease. The moulds, with some forms of which every one is familiar, are the most numerous and common. These last occasion the odors, in close closets, and stuffy bed-rooms, and the fungous, and often colored, growths, on articles of food, or other things, no longer fresh, or exposed to stagnant, and damp air. With such fungi the living specific causes of many diseases, notably of "summer complaints," the scourge of children, find congenial association. Both kinds are most numerous in hot, and damp weather, in and out of doors, but in by far, larger amount, and of more dangerous character, in the house. PURE OUT-DOOR AIR is, by all odds, the most powerful agent for their destruction, as it is one of the most efficient means for the restoration of their victims. Hence, the almost instinctive, longing for out-door life at this season, if only for an occasional excursion, and the increasing exodus from town into the country, in the hot weather.

THE ESCAPE FROM TOWN INTO THE COUNTRY IN SUMMER, is an advantage, provided the country location selected, affords better air, water, food and opportunity for recreation than one's own home. It is the height of absurdity, as a measure of health, to go from a better place for comfort, to a worse one, or to replace a healthy, and quiet home life, by the excitement and multiple discomforts of a stuffy and crowded watering-place hotel.

CAMPING OUT, on the conditions already suggested, offers a way to get out of the house, and the routine of house life, and reduce the conditions of living to the simplest, and easiest of terms. It is an art to live to the best advantage in camp, but it is an art which children learn easily, and happily, and which older people ought to learn.—H.

STATE VETERINARY SURGEONS.—*There are no such officers.* It is reported that certain gentlemen are representing that they are commissioned by this Board, and are empowered to act independent of the Local Boards of Health. We note the statement to contradict it. When employed by this Board it is because of the wide extension of an outbreak, or a dispute of local authorities. Every one has his instructions, which he is to show to the Local Board of the township, with whom his investigation is to be made. He is sent to help them, but has no authority than to make the necessary examinations, and give his opinion to the Local and State Boards for their information. He cannot order the slaughter or isolation of an animal, but he can make the certificate upon which it is wise for a Local Board to act, unless they choose to take further counsel.—H.

#### STATISTICS OF BIRTHS AND DEATHS.

A LONG ESTABLISHED MISTAKE IS VERY DIFFICULT TO REMEDY, as is proven by the tenacious way in which some of the Township Clerks cling to the violation of the old law, collecting at the end of the year. The new law is very clear on this point. We have printed it in various ways, but repeat it here. See, 4, Chap. 96, Laws of 1887: "Such Clerk or Health Officer shall, on or before the fifth day of each month, transmit to the Secretary State Board Health a certified copy of the registry of births and deaths which have occurred \* \* \* during the calendar month immediately preceding." Because physicians and midwives have ten days after the event, to report births and deaths, the Secretary has agreed to accept returns on or before the 12th of the succeeding month, instead of the 5th as provided in the law. Despite the change in the law, and various difficulties in collecting, (as ignorance, or indifference of house holders, carelessness of all those who should report, and the delay of the Clerks themselves,) more than half of the whole number have reported to June 1st. This is a remarkable result.—It is only the beginning. The cordial letters which accompany the returns, in many instances, are cheering evidence that the majority understand the importance of the work, and are willing to do their share to make it a success. There can be no permission to violate the law in the above respect, all must serve alike.

CAUSES OF DEATH.—One reason for the unreliability of the statistics under the old law was the carelessness in reporting cause of death. When a physician is in attendance his certificate of the cause of death must be insisted on, for, without it, there is no reasonable certainty of accuracy. *To save clerks particularly, the trouble of further inquiry, after reasonable effort, the new blanks call for the name and address of the attending physician, so that the Secretary may be able to correspond with him directly, on the subject. By this simple expedient much bother is saved to the clerks and the Secretary is able to trace doubtful records; to follow infectious, or other disease, and, with the aid of his brother physicians, increase the value and accuracy of the returns.* "Lung fever," "brain disease," "kidney disease," and the like, are common examples of carelessness in reporting cause of death. Physicians ought to understand that upon them rests, very largely, the responsibility for permitting such reports to be made, and clerks, and especially Health Officers, should not permit such a return without an attempt to correct it. What disease of the lungs? of the brain? or of the kidneys? are the questions to ask, and any educated physician will answer, if the case was his own.



# REPORT OF INFECTIOUS DISEASE

## OF ONE OR MORE CASES, IN ONE FAMILY.

WHEN POSSIBLE, SHOULD BE MADE BY A PHYSICIAN.

This report must be made, within twenty-four hours, to the Local Board of Health of the Town, Village, or City in which the sick person is.

SEC. 20. *That every physician shall report to the Local Board of Health, in writing, every person having a contagious disease, and the state of his or her disease, and his or her place of dwelling, and name if known, which such physician has prescribed for or attended for the first time since having a contagious disease, or since the discovery of the same to be contagious, during any part of the preceding twenty-four (24) hours; but not more than two (2) reports shall be required in one (1) week concerning the same person; but every attending physician thereat must see that such report is or has been made by some attending physician.*

SEC. 21. *That it shall be the duty of each and every practicing physician in this State, to report in writing to the Local Board of Health the death of any of his patients who shall have died of contagious or infectious disease, within twenty-four (24) hours thereafter, and to state in such report the [specify] name and type of such disease.*

SEC. 22. *That every keeper of any private house, boarding-house or lodging-house, and every inn keeper and hotel keeper shall, within twenty-four (24) hours, report in writing to the Local Board of Health the same particulars required of any physician in the preceding section, concerning any person being at any of the aforesaid houses and hotels, and attacked with any contagious disease dangerous to the public health.*

SEC. 23. *That it shall be the duty of every person knowing of any person sick of any contagious disease dangerous to the public health, and the duty of every physician hearing of any such sick person, who he shall have reason to think requires the attention of the Local Board, to at once report the facts to the Board in regard to the disease, condition and dwelling place or position of such sick person. [Of Chapter 132, Laws of 1883. Sec. 30 defines the penalty.]*

Disease, and date of first symptoms .....

Name, and residence of Patient .....

Sex .....

Age .....

Origin of first outbreak .....

No. of persons in family .....

Male .....

ages .....

Female .....

ages .....

Others exposed? Who and where? .....

Name and address of attending Physician .....

Name and address of person making this return .....



*All births and deaths are to be reported to the Clerk, or Health Officer, as the case may be, of the town, village or city, where it occurred, and not, as some physicians have thought, to the same officer of the place in which the physician or mid-wife lives.*

WHEN THERE HAVE BEEN NO BIRTHS OR DEATHS, REPORT BY POSTAL CARD, as with so many to hear from, such a report is as important as one giving data. If not made, we must write for them.

NEW BLANKS FOR MONTHLY RETURNS OF BIRTHS AND DEATHS—(Forms 3 and 4, Vital Statistics,) Are now being sent out to all Clerks and Health Officers who apply for them. With them will also be sent forms 1 and 2, same series, (for report of births and deaths to Clerk or Health Officer,) if desired. Always specify the number of each required.

GIVE THE NAME OF THE ATTENDING PHYSICIAN, ALWAYS, IN REPORTING DEATHS—So that any inquiries as to disease or cause of death may be sent directly to him, saving you time and trouble. This does not excuse the Clerk from reasonable effort to have all the blanks of his report accurately filled before forwarding to this office.

EACH MONTH BY ITSELF, is the rule. Use one blank, or as much as may be needed of a blank, for each month. Never report more than one month on same blank. It makes confusion in this office, because our arrangement is by months, both in filing, comparing, and recording.—H.

#### DISEASES OF MEN.

SCARLATINA—Reported in 5 localities and 6 counties, with 13 cases and 1 death.

DIPHTHERIA—In 13 localities, and 9 counties, 60 cases and 12 deaths.

MEASLES—Not so general as last month. No deaths. The mildness of the present outbreak, and its wide spread, have made isolation, very often, practically impossible. This is unfortunate, for it must not be forgotten that this disease is very likely to take on a malignant form, and to be very fatal. The rule, which we have suggested to Health Officers, has been to maintain a sharp oversight, and if the disease, in any family, assume a severe form, to establish strict isolation. Of course, children from infected families should be kept from school, or association with other children, so far as possible. The custom of many mothers to take advantage of a mild outbreak of measles, "to get through with it," is often a serious bar to successful isolation.—H.

#### DISEASES OF ANIMALS.

VETERINARY INSPECTOR TRUMBOWER, of the Bureau of Animal Industry, now on duty in Maryland, has, kindly, sent us some very fine specimens of the various pathological stages of infectious pleuro-pneumonia of cattle. The great difficulty in such transmission of pathological specimens is their ready decomposition, unless preserved by means which destroy, very quickly, the color and characteristic distribution, and consistency, of the exudation. The doctor has experimented with a saturated solution of boracic acid in boiled water, in which the specimen is washed, and immediately put into a earthenware jar, which is, itself, closed by cotton cloth and manilla paper covers, saturated with same solution. This jar, so prepared, is packed in a tin pail in straw, the pail closed by tight cover. So packed, the specimens have reached us in fair condition, i. e., characteristic appearances are well marked inside of each. How would it do to wash the specimens in a solution of iodide of mercury, (one grain to half pint of boiled water,) wrapping up in cotton cloth wrung out of same solution, packing as above?

PLEURO-PNEUMONIA OF CATTLE IN CHICAGO.—The stock-yards are declared to be entirely free of the disease, and so is all of Illinois, outside of Cook county. Shipments of cattle through that district, escape all exposure there, and none are shipped out of the infected district. We are therefor freer of danger

from Cook county, than from some districts further east. Every precaution is being taken to escape this new, or rather old, danger, for it has existed longer than the one from Chicago, but has had less opportunity. Our present interest in the work in Chicago is chiefly, therefore, as an illustration of one mode of co-operation between State and National sanitary authorities. It concerns us, because we are liable, at any time, to have the same problem to solve. Not much direct light is to be gotten in Chicago, because the Illinois commission is composed of laymen, though practical farmers and stock-raisers. It began dealing with the present outbreak, with no previous experience of the disease, with a strong popular, or rather stock-yard, feeling against itself and its methods. It had no settled relations with the sanitary authorities of other states, (having control of cattle disease,) nor with the Department of Agriculture. The national authorities, represented by Dr. Salmon, had a good deal of trouble in coming to an understanding with the commission as to the share it should be allowed to take in the control and suppression of the disease. We do not understand that there was any unwillingness to permit the Department of Agriculture to pay the bills, but the gist of the controversy was the relative powers of the state and national authorities in determining methods, and in enforcing them. There has been no dispute that any authority the Agricultural Department had, must be derived from the Commission, so that it has been something of the character of a trade. Money for power. That all has not been satisfactory, is proven by the act of the last legislature (which became a law without his signature,) giving the governor authority to delegate powers, (similar to those of the commission), in the state, to the Department of Agriculture. We have not the text of the law, but believe this to be the essence of it. Whatever the rights of the dispute at Chicago, there can be no doubt that it has seriously impeded the success of the fight against pleuro-pneumonia, making it a much longer and more expensive struggle than it need have been, and one which is likely to be prolonged well up to, if not into, next year. The final difficulty is likely to be the finding of all the cases which have had the disease but have apparently, though not really, recovered. Dr. Law seems of the opinion that three months after the encysting of necrosed lung tissue, (in such cases,) the virus has, probably, been so far attenuated, or destroyed, that it is no longer capable of propagating the disease. If this is a fact, then, three months after the last case, in a herd, for example, the remainder are safe, though one or more, may be of the kind referred to above. It is very satisfactory to see the careful way in which the work has been done, now, in Chicago. The completed record of this outbreak will be of the greatest value in the management of others hereafter.—H.

**NO MORE ANTHRAX.**—Though a sharp lookout has been maintained for it since the fatal cases heretofore reported. No other diseases of cattle, except occasional bronchial affections due to the changeable weather of the spring.—H.

**GLANDERS**—The only disease of horses reported. It has occurred in 19 localities in 15 counties; 29 horses were isolated as suspected of the disease, of whom 12 were killed, 2 discharged as unaffected, and 15 remain still under observation. In each locality, as a rule, but one animal is affected, though several may be isolated as reasonably suspected of being infected. They are usually the property of one man, and it is more and more common to find a history of well proven exposure. *Local Boards of Health* are becoming more active and aggressive, and slaughter follows promptly on certificate that a horse has the disease.—H.

**THE SALE OF HORSES HAVING GLANDERS.**—Evidence is accumulating that parties calling themselves veterinary surgeons are treating such horses under promise of sale, or cure. After medication to temporarily suppress the discharges, and give an appearance of "condition," such animals are sold to unsuspecting buyers, as sound animals. Price and looks together, induce a sale, often without any warranty, or even a knowledge of the name, responsibility, or residence of the seller. *Local Boards* will look out for these men, and the State Board will assist.—H.



## MAY SANITARY INSPECTION REPORTS.

NEW BARNESVILLE, (Village,) PAUL WEST, M. D., H. O.—*Manure*—Nearly all removed: will be finished as soon as teams are available.

*Privies*—Mostly of the "hole-in-the-ground" variety. Very few cleaned in spring because of expense.

*Sickness*—What has occurred this spring was due to damp ground, cold winds, and sudden changes of temperature.

*General Sanitary Condition*.—Good, except as to construction and condition of privies.

*Recommendations*—Council to appoint a scavenger with fixed compensation for work performed. Board of Health to require each privy to have a tight receptacle, and that families provide, and use, a barrel having tight cover for house refuse, to be emptied at regular intervals. All causes of disease will be checked in their operations when the streets are better graded, and the trees which have been planted, are larger.

HOUSTON, (V.) HOUSTON CO., D. C. RHINES, M. D., H. O.—*Stock-Yards*—Declared by Local Board of Health a nuisance. Though of long standing, and for years complained of, and ordered removed, the company has paid no attention to the order. The advice of the Secretary asked for. He referred them to Chapter 222, Laws of 1885, (reprinted in this number of PUBLIC HEALTH,) which puts the control of all offensive trades in the hands of the Local Board of Health, and that of the State Board, when necessary.

*General Sanitary Condition*—After thorough inspection, was found good, except as above.

WACONIA, (V.) CARVER CO., H. R. DIESSNER, M. D. H., O.—Despite preliminary notice, in local newspaper, found large accumulations of garbage and manure, in some alleys and back yards; ordered removed.

*Infectious Diseases*—Diphtheria, 30 cases and 11 deaths during the year. None now. Scarlatina, 1 case. Measles, many cases; no deaths.

HAWLEY, (V.) W. TANNER, ACTING H. O.—*Streets and Yards*—Clean.

*Privies*—"Hole-in-the-ground;" some too near wells.

*Pond-holes*—Two on railroad right of way, offensive in summer, and should be drained or filled. While drying they cause a great stench. Village not able to do the work, and the railroad refused to do it. The Local Board asks advice. (Calling attention to Sec. 4, Chap. 132, Laws of 1883, the Secretary replied, that the Local Board had the same authority to compel a railroad company to obey the law forbidding nuisance, as the private citizen, and should exercise the right promptly, in either case, if in its judgment, necessary for public health).

CHASKA, (V.) J. W. BOWERS, M. D., H. O.—*Population*, 350 families; 10 days before inspection gave notice in local newspaper, to clean up. Orders obeyed in most cases. Personal notice was then served by village marshal, to obey within 48 hours, when the work was done by the Local Board of Health, at owner's expense. The result was a great improvement of sanitary condition of the village.

*Privies and cess-pools*.—So far as known not a properly constructed one in the village. Privies are "holes-in-the-ground," curbed with plank.

*Water supply*—Wells, some of which are too near privies.

*Epidemic or Infectious Diseases*—None.

BRAINERD (C.) CROW WING CO., W. COURTNEY, M. D., H. O.—*Population*—6000 (estimated).

*Water supply*—Through water works from Mississippi River, and by wells and cisterns.

*Sewerage*—No system yet adopted, but hope to have one for those parts of the city most in need before winter.

*Stops and other fluid refuse*—Disposed of by cess-pools, or in the Mississippi River.

*Night soil, garbage and manure*—Dumped into the Mississippi River.

*Privies and vaults*—Large numbers are in bad sanitary condition, through previous neglect, but the Local Board are determined to do all that can possibly be done to put them in better condition. The work being an innovation here goes slowly.

*Inhabited lots, streets and alleys*—in good condition.

*Disease prevalence*—Lessened by the introduction of river water.

*Infectious Diseases of men*—None reported. *Of animals*—Glanders in one or two cases, quickly disposed of.

*Public Buildings*—Schools, court house, opera house, jail, as good as absence of sewerage, and their construction, will allow.

*Hotels and boarding houses*—Sanitary condition of leading hotel is bad, and difficult to remedy without sewer system.

*Stagnant water*—Not badly off. A few places need filling, but at present are not seriously menacing the public health.

HERMAN TOWNSHIP, ST. LOUIS CO., JOHN SCHUMANN, T. C.—Local Board of Health made personal inspection of the township, and found nothing to correct. General health, good.

*Infectious Disease*—None of men or animals.

CHATFIELD (V.) FILLMORE CO., R. W. TWITCHELL, M. D., H. O.—(The Health Officer was elected on May 27th, so that his time was limited for inspection and report.)

*Method of inspection*—By a personal visit to all the places reasonably suspected of insaniary condition, viz.: cellars, barns, alleys, livery stables, manure heaps, stables, pig-sties, privies, out-houses, stowaways, and wells.

*Results of inspection*—As a rule, fair, some faulty, other decidedly bad. The good have been approved, the faulty have been corrected; the bad imperatively condemned, with instructions for an immediate change for the better. The health officer will make it a part of his duty to see that the suggestions of the Board are complied with.

*Privy-vaults*—These deep and old, are the most deplorable feature of our sanitary condition. They have been thoroughly disinfected. As soon as practicable, they will be thoroughly cleaned, and filled up. They will be replaced by water-tight receptacles, to be kept constantly disinfected, with removal of contents as often as need be. Dry earth is advised for constant use.

*Wells*—Certain of these in the city are already contaminated (as determined by microscopic test,) and their use has been interdicted. The situation as to its surface, of Chatfield, is such as not to permit of surface cess-pools. For that reason, without the grossest neglect, we need not fear infectious diseases which are likely to assume the non-malignant form, as at present. Scarlatina of a very mild type has prevailed for some time, the deaths to date having been from secondary causes, except one of which the cause is not clearly known. The disease is now confined to a single family, and not likely to escape that limit.

RAYMOND TOWNSHIP, BROWN CO., JOHN BROWN, CHAIRMAN TOWNSHIP BOARD OF HEALTH—Have completed sanitary survey of township, and found all things in good, sanitary condition. A single nuisance discovered (a dead cow,) which was immediately buried.

#### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF MAY.

##### DISEASES OF MEN.

Diphtheria.....	{ cases, 60
	{ deaths, 12
Scarlatina.....	{ cases, 13
	{ deaths, 1

##### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	16
Reported during the month.....	29
Killed.....	13
Released.....	2
Remaining June 1st isolated or not accounted for.....	30

DIPHTHERIA—Reported from Long Lake Tp., Watonwan Co.; New Ulm, (c.) Brown Co.; St. James Tp., Watonwan Co.; Shieldsville Tp., Rice Co.; Excelsior (v.) Hennepin Co.; French Lake Tp., Wright Co.; Spring Grove Tp., Houston Co.; Red Wing, (c.) Goodhue Co.; Albion Tp., Wright Co.; Blooming Prairie, (v) Steele Co.; Collinwood Tp., Meeker Co.; Dassell Tp., Meeker Co.

SCARLATINA—Reported from Madelia, (v.) Watonwan Co.; Waconia, (v.) Carver Co.; Rochester, (c.) Olmsted Co.; Sleepy Eye, (v.) Brown Co.; Chatfield, (c.) Fillmore Co.; Crookston, (c.) Polk Co.

## AN ACT TO REGULATE OFFENSIVE TRADES AND EMPLOYMENTS—CHAP. 222, LAWS OF 1885.

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. The Board of Health of each town, village or city in this State, shall, from time to time, assign certain places within such town for the exercise of any trade or employment which is a nuisance or hurtful to the inhabitants, or dangerous to the public health, or the exercise of which is attended by noisome or injurious odors, or is otherwise injurious to the estates of such inhabitants; and may prohibit the exercise of such trade or employment in places not so assigned. Said Board may also forbid such exercise within the limits of the town or particular locality thereof. All such assignments shall be entered in the records of the town and may be revoked when said Board shall think proper.

SEC. 2. It shall not be lawful for any person or corporation to exercise within any town, village or city, any trade or employment mentioned in section one (1) of this act, without having first obtained from the Board of Health of such town, village or city, permission so to do, and the assignment provided in said section; and any person or corporation violating the provisions of this section shall forfeit and pay the sum of fifty dollars (\$50) for each and every day that any such trade or employment is exercised or carried on, to be recovered in any court having jurisdiction thereof, and sitting within the county where any such trade or employment is exercised or carried on; such action shall be commenced and prosecuted by such Board in its name and for its benefit.

SEC. 3. When any assignment mentioned in section one (1) hereof shall be revoked, said Board shall serve upon the occupant, corporation or person having charge of the premises where such trade or employment is exercised a written notice of such revocation. If the person or corporation upon whom such order is served, for twenty-four (24) hours after such service, refuses or neglects to obey the same, said Board shall take all necessary measures, by injunction, or otherwise, to prevent such exercise; and the person or corporation so refusing, or neglecting, shall forfeit and pay the sum of one hundred dollars (\$100) for each and every day that such trade or employment shall be exercised after the service of such notice, to be recovered in the manner and by the party and for the benefit as provided in section two (2) hereof.

SEC. 4. Any person or corporation aggrieved by any order of such Board, may appeal therefrom to the district court of the county in which such trade or employment is exercised. Such appeal shall be taken by the filing of such aggrieved person or corporation, within five (5) days after the service of such order, in the office of the clerk of said court, of a notice of such appeal, together with a bond in the sum of not less than five hundred (500) dollars, with two (2) or more sureties, to be approved by the judge of said court, conditioned for the prosecution of such appeal to judgment and for the payment of all costs and expenses that may be awarded against such appellant, and by the service of a copy of such notice and bond upon such Board. If such appeal be taken within twenty (20) days next before the time appointed for holding a general term of said court within said county, the same shall be heard at such time as other civil causes, and at the request of either party, shall be tried by jury. If such appeal is taken more than twenty (20) days before any such term, the judge shall, by order, appoint a time and place for the hearing of such appeal, and shall, if the appellant demand a trial by jury, direct the sheriff of such county, to summon a jury of twelve (12) persons having the qualifications of jurors, to appear at the time and place named in said order, to serve as jurors in said cause. Any person so summoned may be challenged as in civil actions. If a sufficient number of such persons so summoned do not appear, the court shall require talesmen to be called as in other cases, and said appeal shall be tried as other civil causes. During the pendency of such appeal, such trade or employment shall not be exercised contrary to the order of said Board; and upon the violation of any such order the appeal shall forthwith be dismissed. Upon the return of the verdict of the jury the court may either alter or amend the order of the Board or affirm or amend it in full, to conform to such verdict. If the matter be tried by the court it shall have and exercise the same power.

SEC. 5. Any person injured, either in his comfort or the enjoyment of his estate, by the exercise of any such trade or employment, may have and maintain an action for the damages sustained thereby.

SEC. 6. When it appears on a trial before the district court for the proper county, upon a complaint made by any person that any place or building assigned as provided in section one (1) of this act has become a nuisance by reason of offensive smells or exhalations proceeding from the same, or is otherwise hurtful or dangerous to the neighborhood, or to travelers, said court may revoke such assignment and prohibit the further use of such place or building for the exercise of either of the aforesaid trades or employments, and may cause such nuisance to be removed or prevented.

SEC. 7. When any building or premises within any city, village or town are occupied or used for the exercise of any trade or employment aforesaid, the State Board of Health shall, upon application made to it for that purpose, appoint a time and place for hearing the parties, and give notice of not less than ten (10) days thereof to the complainant and the party against whom such application is made, and after such hearing may, if in its judgment the public health or the public comfort and convenience so require, order any person to desist and cease from further carrying on such trade or occupation in such building or premises; and any person or corporation thereafter continuing to occupy such building or premises, shall forfeit and pay the sum of one hundred (100) dollars for every day of such occupancy or use, to be recovered in any court having jurisdiction thereof by action commenced and prosecuted in the name of the Board of Health of such city, village or town, and for its use and benefit. Any person or corporation aggrieved by any such order, may appeal therefrom, and said appeal shall be taken, prosecuted and determined in the same manner provided in section four (4) of this act. During the pendency of such appeal, such trade or employment shall not be exercised contrary to the orders of said State Board, and upon the violation of [any] such order, the appeal shall forthwith be dismissed.

SEC. 8. The district court, or the judge thereof, may issue an injunction or other proper



writ, to enforce the orders of said State Board, issued under the provisions of this act.

SEC. 9. Nothing in this act contained shall be construed as to impair any other remedies which may exist in cases of nuisance.

SEC. 10. This act shall take effect and be in force from and after its passage.

Approved March 7, 1885.

# *AN ACT TO PREVENT THE POLLUTION OF RIVERS AND SOURCES OF WATER SUPPLY.—CHAPTER 225, LAWS OF 1885.*

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. No sewage, drainage or refuse or polluting matter of such kind as either by itself or in connection with other matter will corrupt or impair the quality of the water of any spring, well, pond, lake, stream or river for domestic use, or render it injurious to health, and no human or animal excrement shall be placed in or discharged into, or placed or deposited upon the ice of any pond, lake, stream or river, used as a source of water supply by any town, village or city; nor shall any such sewage, drainage, refuse, or polluting matter or excrement be placed upon the banks of any such pond, lake, stream or river, within five miles above the point where such supply is taken, or into any feeders or the banks thereof, of any such pond, lake, stream or river: *Provided*, Nothing in this section contained shall apply to Lake Superior. (Struck out by Legislature of 1887.)

SEC. 2. The State Board of Health shall have the general supervision of all springs, wells, ponds, lakes, streams or rivers used by any town, village or city as a source of water supply, with reference to their purity, together with the waters feeding the same, and shall examine the same from time to time, and inquire what, if any, pollution exist, and their causes. In case of a violation of any of the provisions of section one (1) of this act, said Board may appoint a time and place for hearing parties to be affected, and shall give due notice thereof, as hereinafter provided, to such parties, and after such hearing, if in its judgment the public health requires it, may order any person or corporation, or municipal corporation to desist from the acts causing such pollution, and may direct any such person or corporation to remedy the pollution, or to cleanse or purify the polluting substance, in such a manner and to such a degree as shall be directed by said Board, before being cast or allowed to flow into the waters thereby polluted, or placed or deposited upon the ice or banks of any of the bodies of water in the first section of this act mentioned. Upon the application of the proper officers of any town, village or city, or of not less than legal voters of any such town, village or city, to said State Board, alleging the pollution of the water supply of any such town, village or city, by the violation of any of the provisions of this act, said State Board shall investigate the alleged pollution, and shall appoint a time and place, when and where it will hear and examine the matter, and shall give notice of such hearing and examination to the complainant, and also to the person or corporation, or municipal corporation alleged to have caused such pollution, and such notice shall be served not less than ten (10) days prior to the time so appointed, and shall be served in the same manner that now is, or hereafter may be, by law provided for the service of a summons in a civil action in the district court. Said Board, if in its judgment any of the provisions of this act have been violated, shall issue the order or orders already mentioned in this section.

SEC. 3. The district court, or the judge thereof, may upon the complaint of said State Board, or of the proper authorities of any town, city or village whose sources of water supply shall be so polluted, issue an injunction to enforce the orders of said State Board.

SEC. 4. Such orders of the State Board shall be served upon the persons, corporations, or municipal corporations found to have violated any of the provisions of this act, and any party aggrieved thereby, shall have the right to appeal to the district court of the county in which is situate the town, village or city whose source of water supply is found to have been polluted, and such aggrieved party shall have the right to a trial by jury in the same manner as in a civil action in said court. During the pendency of the appeal, the pollution against which the order has issued, shall not be continued, contrary to the order of the State Board, and upon the violation of the order the appeal shall forthwith be dismissed.

SEC. 5. Any person, corporation or municipal corporation desiring to appeal from any such order of the State Board, shall, within thirty (30) days after the service upon him or it of a copy of such order, file in the office of the clerk of the district court of the proper county, a notice of such appeal, together with a bond in the sum of not less than two thousand (2,000) dollars, with two (2) sureties, to be approved by the judge of said court, conditioned for the prosecution of such appeal to judgment, and for the payment of all the costs and disbursements that may be adjudged against him or it therein, and shall, within three (3) days after such filing, serve a copy of such notice and bond upon the Secretary of said Board; and said Secretary shall, within ten (10) days thereafter, deliver such copies so served upon him to the mayor or other chief executive officer of any such city, village or town, whose source of water supply has been found to have been so polluted.

SEC. 6. Water boards, water commissioners, water companies, and the proper officers of any city, village or town, making use as a source of water supply, of any well, spring, pond, lake, stream, river, reservoir or well, within, or partly within, this State, and distributing the waters thereof for public, domestic and general uses, shall, from time to time, and whenever required by said State Board, make returns to said Board, upon blanks to be furnished by it, of such matters as may be required by said Board and called for by such blanks, and any such water board, water commissioners, water company, or officers of any city, village or town, who shall, for the space of thirty (30) days after being furnished with such blanks, fail or neglect to make any such report so required, shall, for each and every such neglect or failure, forfeit and pay the sum of one hundred (100) dollars, for the use of the Local Board of Health, or the proper officers acting as such, of the city, town or village where such delinquent has its principal office. Said State Board shall, in the name of the State, prosecute in the district court of the proper county an action for the recovery of the penalty or forfeit herein imposed.

SEC. 7. This act shall take effect and be in force from and after its passage.

Approved March 7, 1885.



# PUBLIC HEALTH IN MINNESOTA.

—THE—

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A DOUBLE NUMBER.—For the first time since PUBLIC HEALTH began publication, (March, 1885,) the work of the office has been so heavy as to prevent a month's issue (June). We make up the deficiency by a double number, which enables us to divide the contents according to the departments of our work to which they relate.

## VITAL STATISTICS.

FOR the first six months of 1887, there have been returned to the Secretary 4,523 deaths, and 9,252 births. Of births by months: January, 1,202; February, 1,198; March, 1,703; April, 1,912; May, 1,843; June, 1,394. Of deaths: January, 525; February, 549; March, 719; April, 959; May, 856; June, 915.

*Operation of the Law.*—Despite the requirement of the new law, that returns be made monthly, and the expressed belief, of many, that so frequent collection would be found impossible, in practice, we are able to state that more than two-thirds of all the cities, villages and townships in the State are making regular monthly reports of births and deaths, and that the number, and fullness of the returns increase, as time and practice make Health Officers and Clerks more familiar with the duty.

A large proportion of the Secretary's time has been occupied in answering inquiries, correcting mistakes, preparing and issuing blanks, forms, and circulars, for the use of physicians, and others making returns to Health Officers and Clerks; larger forms for consolidating these individual returns into the reports of those Officers; and finally the preparation of the trial sheets and books of record for his own use. This preparatory work is now so far advanced that we have begun the consolidation of the Death Returns for the first half of 1887. As soon as practicable, the results of this study will be published in PUBLIC HEALTH. Meantime the returns enable the Secretary to know, soon after its occurrence, the whereabouts of infectious disease, not otherwise reported, and that of other forms of disease amenable to sanitary control. This has already enabled the State Board to assist Local Boards in the management of such diseases sooner than would have been otherwise possible. The principal fault of the returns is the indefinite statement of personal and parent nativity, and of causes of death. We will discuss them with abundant illustration, soon.

## POISONING BY PREPARED FOODS—SMOKED STURGEON AND PRESSED BEEF.

—Dr. Mosse, Health Officer of Rochester, makes a very interesting and valuable report of the symptoms and results of a widespread poisoning by the eating of smoked sturgeon in that city. The Doctor was a severe sufferer in person and in his family. We have obtained a detailed statement of the process of catching and curing of the fish from Mr. Brown, the founder of this industry at Wacouta, with another statement from the partner who sold the fish which occasioned the sickness, of which he, too, was a victim. The sample sent to us was already in varying stages of putrefaction, and no difficulty was found in isolating—from a selection of the best of it—a crystalline product which responded to all the chemical and physical tests which determine the existence of

the so-called ptomaines. All the facts which we have been able to obtain are submitted herewith. The process of curing is a combination of steaming and smoking, thoroughly empirical in method, and uncertain in result. The fish were kept on ice by the firm, in their delivery wagon, till delivered to consumers or retail dealers. These last do not, as a rule, keep the fish on ice, but treat it as smoked halibut, which is much more perfectly cured. Consumers do the same. The Wacouta firm make a rule to inform all purchasers that ten days to two weeks is the limit of good condition, but it does not appear that retail dealers are careful to do so. It is proper to state that this industry at Wacouta began in a little way, as a local industry of Red Wing, and has extended as an addition to the trade in fresh fish, which is the leading business of the firm. Having said this much, there still remains the fact that with the increase of the business must come increased care of the product, and such lessons as this one must not be repeated. There was serious danger of life, aside from the suffering which fully 200, who ate of the fish, endured. The report of Dr. Cole relates to symptoms of poisoning after eating corned beef. The sample sent to us seemed by sight and smell healthy food. A small quantity was eaten with no unpleasant results. Careful analysis failed to yield any abnormal product. In another outbreak, of which no details were given, we found semi-crystalline residues, which, in very small dose, produced the symptoms described. There is little doubt that this poison is one of the results of beginning decay, and that more care in the selection of material; its preparation; preservation, till, and during, its sale (pressed beef is made in large masses and sold therefrom by the pound), would reduce this occasional danger to the minimum.

*POISONING BY SMOKED STURGEON AT ROCHESTER, ORONOCO  
AND MAZEPPA, MINN.*

ROCHESTER, MINN., July 12, 1887.

DR. CHAS. N. HEWITT, Secretary State Board of Health.

*Dear Doctor:*—I made a report to you on June 20th, of the occurrence of poisoning in this city of a large number of persons from ingestion of smoked sturgeon, and sent a sample of the sturgeon to you by express on June 21st, last. There were two hundred or more cases in the city, and quite a number in the towns of Oronoco, Mazeppa, and the tributary country.

The fish was brought here from Wacouta, via. Mazeppa and Oronoco, by A. W. Pingrey, a fish peddler, who tells me that the fish is cured by the firm known as Brown, Post & Pingrey, of Wacouta. The following is the process:

The sturgeon are taken from Lake Pepin, dressed and laid in salt for twelve hours; they are then freshened and hung in a smoke-house and smoked for six hours, when they are considered sufficiently cured.

The firm do not consider the fish cured sufficiently to preserve it for more than a week, and they say that they take steps to immediately dispose of it, notifying their customers, the grocers and market men that it will not keep more than a week or ten days. They ship from Wacouta to St. Paul, Minneapolis, and other points by rail, and run two wagons through the country.

Pingrey states that the load of sturgeon he sold here as above noted, was smoked on Saturday, June 3d, and was left to hang in the smoke-house until Monday, June 5th. He then packed it in a wagon-box, and starting Tuesday, arrived here Wednesday evening, via. Mazeppa and Oronoco, selling the fish here at our groceries and meat-markets on Wednesday and Thursday, June 7th and 8th. One grocer sold eighty pounds to his customers. The retailers here admit that Pingrey sold the meat to them with the understanding that it would keep only a week or ten days. But in no instance was a customer notified that the meat would keep only a short time, many customers buying a supply that might last two or three weeks, expecting it to keep as well as smoked Halibut. The fish is salted and smoked so slightly that it tastes very sweet and pleasant, and is very toothsome and popular. The manufacturers cure it so little on this account. Sickness commenced usually about twenty-four hours after its ingestion; in some cases only slight malaise; but in others, nausea and vomiting;

severe pains in abdomen; diarrhœa profuse, watery and offensive; severe pains in back and head; soreness in all the muscles, even in those of eyeball; severe prostration; total loss of digestive power and insomnia resulted, with a sharp and considerable rise of temperature. In some cases delirium ensued; in others, cramps of muscles of extremities. A great many cases were prostrated so as to be unable to leave the bed and have not yet fully recovered.

A majority of the cases, while quite sick, did not have all of the above mentioned symptoms, and were around again in a few days.

Some of the pieces of fish were thin and pretty well cured, and parties who happened to eat of these pieces, only had malaise or other slight sickness (Mrs. Toogood's family). Other pieces of the meat were thicker, and neither salt nor smoke had penetrated; those eating this manifested the most severe symptoms (this happened in my own case). In one family the meat was cooked and not one was sickened, although they ate heartily of it (J. A. Cole's family). In my family two ladies and myself ate of the fish, and were violently ill from it; three other ladies and two gentlemen did not eat of it and remained entirely well. The same thing happened in other families. The sample of smoked sturgeon sent you was obtained at the same grocery at which the fish was procured that caused the poisoning in my family.

Recovery resulted in every case. The microscope showed a specimen examined on June 10th, to be swarming with the vibriones of decomposition. Bacteria were numerous in it. My idea is that the meat was eaten in the first stage of decomposition, the resulting ptomaines, causing the irritation of the digestive tract.

I ate a small quantity of a specimen that was but little cured, and was severely ill; pain in abdomen, some watery, long-continued diarrhœa, severe pains in back and head, muscular soreness, and loss of twenty pounds in weight in a week, were the prominent acute symptoms, followed by extreme debility of the muscular and nervous systems, and flatulency and inactivity of bowels—so severe that enemas had to be resorted to several times a day to relieve the bloating and constipation—the sickness lasting about three weeks.

The customer, knowing nothing of the process and cure, innocently compares the smoked sturgeon to smoked halibut, and, and thinks it will keep as well.

I am of the opinion that the manufacturers are at fault and ought to be prohibited from curing it in this manner, and ought to be prosecuted in the interest of the people. Although I must say this much in their favor, that they did not represent that the meat would keep more than a week or ten days, but notified the retailers of this fact. The latter being at fault in supplying such flesh to consumers and withholding from the latter such necessary information concerning it.

I should like to see its manufacture prohibited; or, if it is healthy food when properly cured, the manufacturers ought to cure it properly, or suffer penalty of prosecution and its results.

F. R. MOSSE, M. D., Health Officer.

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RED WING, MINN., July 7, 1887.

MR. E. BROWN, at the request of the Secretary, makes the following statement with respect to the catching and curing of what are known as rock sturgeon at Wacouta, head of Lake Pepin, by Brown, Post & Co.

*Catching.*—Size of fish from three to ninety-six pounds; average eight pounds, by pond nets, which are in constant operation. Fish are gathered every morning except Sunday. Amount of catch varies from one to seven hundred fish, collected in floating box, perforated with holes, twenty-five feet long, shaped like a canoe, capable of holding 2,500 pounds, and transported in this to live boxes at fishery, 12x18x3½ feet, made of fencing; kept in live boxes from three to five days. Fishing season, May 1st to November 10th.

*Slaughter.*—Heads cut off with hatchet in the live boxes; taken to shore and cleaned and divided into halves, lengthwise. If very large, slit on fleshy



side, lengthwise, so as to readily receive salt (this is done in hot weather, not in cool).

*Cleaning.*—They are then thrown into wash box on shore, filled with river water, and stay there about fifteen minutes, water being changed about three times in a batch of 1,000 pounds. This water is obtained about fifteen feet from shore, in the current of the river. Then thrown into a chill box, capacity of about 1,000 pounds, filled one-third river water and one-third ice. Water not changed.

*Curing.*—From chill box into salt, (common barrel,) skin side down. Salt rubbed on flesh side all it will take. Two pieces put together, flesh to flesh, and laid into "pickle" box. When the batch is finished a board is laid on, weighted with stone; remain here from twenty-four to thirty hours. After three hours, fluid drawn from fish by salt, covers the boards, from two to three inches deep. This box is under shed. The fish are removed from the box and the skin side scraped to remove slime; then thrown into wash box and fresh water. Two washings in this box, by stirring with sticks, and then carried to smoke-house in tubs immediately. The smoke-house is of rough grooved lumber, gable roof, 8x8x8 feet. Ventilator at top 6x6x6 inches, closed by valve. The fish are hung on hooks from strips, at junction of roof and wall, so that fish are six and a half to seven feet from fire, which is a smouldering one built on earth floor of the house; the wood used is oak grubs and cottonwood drift wood, and occasionally soft maple; use about one-tenth of a cord for one smoking. Capacity 500 pounds—equal to 1,000 in fresh state. The fire is maintained from eight to twelve hours; temperature, nearly boiling (probably about 170 F.). Fat oozes freely; no fish are hung directly over the fire; sometimes smaller fires are used at the corners to secure thorough cooking. It must be understood that this process combines cooking and smoking; otherwise cooking would be necessary before eating.

*Selection of fish*—Rock sturgeon exclusively; must be fat, lively, and free from lamprey eels, or their bites. Have found as many as twenty, six to ten inches long attached to one fish. They seem to select the sickly and weaker fish, so we take their presence as evidence of debility in the sturgeon.

*Color of flesh.*—Fresh sturgeon varies from white to dark pink, and is solid to the feel. When cured they are dryer and tougher, color varying from yellow to pale pink or white.

*Test for condition of marketable sample.*—When the thick part is broken open, it should be fibrous, free from perceptible moisture, and should not look milky, or be mushy to pressure, and should have no other odor than that of the smoke.

Duration of merchantable condition, from ten days to two weeks, after smoking, under reasonable care. As a rule sales are speedy. We have never kept the fish over five or six days after smoking; would not guarantee over ten or fifteen days with the best of care in summer. Have never attempted a cure to extend beyond this time, or for winter consumption.

*Rochester and Mazeppa outbreak.*—Do not know of any difference in catching, keeping or curing, from the ordinary rule of the firm. Will make strict inquiries on the line suggested by the Secretary, and report. Never had a similar complaint since I began this business ten years ago.

Respectfully,

E. BROWN.

#### POISONING AFTER EATING PRESSED BEEF AT FERGUS FALLS.

FERGUS FALLS, Minn., July 26, 1887.

DR. HEWITT, Secretary State Board of Health.

*Dear Doctor:*—I send you by Northern Pacific Express to-night a sample of pressed beef, of which several people ate yesterday and were made very sick by it, with following symptoms, three hours after eating, of terrible nausea and vomiting, followed by diarrhoea, with general collapse. No deaths. I have examined the corned beef from which it was made, and it looks very nice, and the people who ate of the pressed beef called it very fine. It was made by one of



our best meat men, John L. McKinstry; you know him. Please write me what you find, and if you can vindicate the meat man please do so, as some are trying to injure his business by claiming he put in stale meat. Yours truly,  
A. B. COLE, M. D., H. O.

### DISEASES OF CATTLE.

**ILLINOIS CATTLE AT THE MINNESOTA STATE FAIR.**—The question of their admission having arisen, the Secretary submitted the question to Prof. Law, who replied as follows, so that such cattle are permitted to be brought here for that purpose, on certificate of the proper official of the Illinois Cattle Commission that they are well, and have not been exposed for ninety days to infectious pleuro-pneumonia.

UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU  
OF ANIMAL INDUSTRY, 218 LA SALLE ST.,  
CHICAGO, ILL., July 23, 1887. }

DR. CHAS. N. HEWITT, Secretary State Board of Health.

*Dear Sir:*—On my return I found your favor of the 15th, awaiting me. Many thanks for the inclosures.

In reply to the question as to the safety of Illinois cattle outside the limits of Cook County, I would say that it is about on a par with those of Minnesota, Wisconsin and the other States. No lung plague (contagious pleuro-pneumonia) is known to exist in this State outside a limited portion of Cook County; no cattle whatever are allowed to leave the circumscribed infected district; every herd in which the disease is found within the infected district, is promptly slaughtered, and the premises disinfected. It is, therefore, extremely improbable that infection will be carried out of this scheduled district into other parts of Illinois.

I do not hesitate to say that the State of Illinois, apart from Cook County, is to be held as free from lung plague, as are the other States in the Mississippi valley. No one can give a perfect guarantee for any one of them so long as it is possible to ship cattle from infected districts in the Eastern States, through some indirect or surreptitious channel. But as regards Cook County, we have now such an accurate knowledge of the cattle of the district, and such a systematic control of all movements of cattle, and such means of elucidating every case and cause of disease and death, that we can give an excellent guarantee that the rest of Illinois will not be infected anew from this source,

Respectfully,

JAMES LAW,

Chief Inspector for Illinois.

MALIGNANT CATARRH OF CATTLE IN HAVANA TOWNSHIP, STEELE COUNTY, MINN.

**CASES** first reported in the herd of F. Ahrens, December 20, 1886, by V. M. Connelly, V. S., Owatonna, who suspected pleuro-pneumonia. January 4 the Local Board of Health reported that Ahrens had lost seven head of cattle. January 18, 1887, by request of Secretary Dr. Davis, member of Board, in company with a veterinary surgeon from Mankato, visited Mr. Ahrens' farm and examined his cattle and the sanitary condition of his stables and surroundings, reporting that there were no cattle sick then; last of seven had died before Christmas. February 3d the Local Board of Health and Mr. Ahrens gave sworn statement that none of his cattle had been sick for two months, and that there were no signs of disease now, and requested the Secretary to allow the owner to dispose of some fat steers for slaughter, which he did, upon the guarantee of the Local Board of Health that they would go straight to slaughter, and that no cattle had been sick since November 28, 1886.

Nothing further was heard of cattle until June 14th, when a member of the Local Board of Health reported that Ahrens' were again sick with suspicious disease, and requested the Secretary to come to them at once. June 14th the Secretary visited the herd and examined a sick cow, requesting the lungs or other diseased organs if she died. On receipt and examination of the lungs June 21st, the Secretary wrote to Mr. Ahrens: "Am glad to be able to

assure you that I find no evidence of chronic bronchitis and of no other disease of the lungs. Am sorry not to have been able to examine your pasture with you, and am satisfied that its condition has something to do with this sickness, being very likely damp and chilly. Send me the lungs or other organ which seems diseased in animals which die hereafter. Keep your stock off damp pasture before sunrise or after sunset. Keep any which show a disposition to cough, off of damp pasture and under shelter at night. Give to all such a bran mash, containing an ounce of saltpetre and a tablespoonful of ginger. I see no evidence of infectious disease in your cattle in the past, but rather believe the sickness to be due to dampness, slough water, and perhaps other conditions unknown."

He afterwards examined another pair of lungs from another of the same herd. July 1st the chairman of the Local Board of Health reported that the owner had fifty-three head of cattle, and had lost ten cows and eleven calves since the sickness began.

July 18th the chairman of the Local Board of Health telegraphed that two more cows were sick, and requesting the Secretary to come at once. July 20th Dr. Law, Chief Inspector of Bureau of Animal Industry, accompanied the Secretary to Havana and examined Mr. Ahrens' cattle, and pronounced the disease malignant catarrh, as is shown by his report printed below. Our correspondence for months has pointed to a very close relation between low, marshy, partially dried, swampy pastures, and the class of disease to which this one belongs. Prof. Law throws considerable light on the subject in discussing the Havana outbreak.

UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU  
OF ANIMAL INDUSTRY, 218 LA SALLE ST.,  
CHICAGO, ILL., July 23, 1887. }

DR. CHAS. N. HEWITT.

*Dear Sir:*—The so-called malignant catarrh of cattle, corresponds in the main with the affection that has prevailed in the herd of Fred Ahrens, at Havana, Minn., which we inspected on the 20th. The association of the malady with damp, or waterlogged, soils, as in his pastures, or with stagnant, putrid ponds, as at his cattleyards, the predisposition acquired by unhealthy conditions of life, as in his rather confined cowbarn, where the exclusive victims (Mr. A's cows, etc.,) had been kept, is suggestive. Then the sudden onset, the nervous rigors, the congestion of all the visible mucous membranes, the cracking and sloughing of the muzzle, the desquamation of the buccal mucous membrane, the muscular weakness and stiffness, and the death in convulsions, agree exactly with symptoms in the victims I saw at Mr. Ahrens'.

I might add what might easily be inferred from the destructive changes in the mucose and skin that the matrix of the frontal horn frequently suffers so that the horns are sometimes shed; and here again the ready detachment of the horn of Mr. Ahrens' cow when pulled upon, serves to identify the disease.

The manifest absence of all contagion, and the strict confinement of the disease to Mr. Ahrens' herd, together with the occurrence of attacks at long intervals, serve to connect the disease in Mr. A's herd with the one mentioned.

As might be inferred from the past experience with Mr. Ahrens' herd, the disease is manifestly an essentially enzootic one, and depends on some poison generated in an unwholesome soil from which it is not propagated by continuous contagion. There is, therefore, I apprehend, nothing to fear in the case of neighboring herds so long as they are not allowed to go on the soil by which the disease is produced. Mr. Ahrens' cattle, though moved to other soils and mingled with other cattle, are not at all likely to convey anything injurious to the latter. There can accordingly be no objection to the sale of the cattle for slaughter, or otherwise, as if anything were to happen it would only be to the herd removed, and not to any herd with which they may come in contact.

This absence of contagion and of a self-perpetuating power of the disease, apart from the deleterious soil, seems to mark the affection as not due to the introduction into the animal system of a specific organized germ, but rather of the poisonous chemical products of such germ, which expend themselves like

any chemical agent and are powerless for further mischief. The organized germ is doubtless present in the damp soil or water, and its poisonous products are taken in with the breath, the water or the food of animals having access to such soil.

In England, the disease in question, is very prevalent, and the undrained river bottoms of Yorkshire, and in the fens of Norfolk and Lincolnshire, while on the continent of Europe, it is especially the disease of bottom lands, drying lakes and marshes, and deltas—of the lands, in short, which are the normal habitates of anthrax. That it does not appear on all such soils, nor on the same soil at all times, may be accounted for by the absence from many of the specific poison-generating germ; and again, because the germ does not produce the toxic element of the same potency at all seasons alike; or at all the different stages of its development.

Respectfully,

JAMES LAW, V. S.,  
Professor Veterinary Medicine Cornell University.

**THE LOCALITIES WHERE CONTAGIOUS PLEURO-PNEUMONIA OF CATTLE NOW IS, AND METHODS OF QUARANTINE AGAINST IT.**—The increasing urgency of the dealers in cattle for less restriction upon the traffic; the disposition on the part of some authorities to increase the restrictions; and the criticism of Minnesota methods, with other reasons, apparent on reading the following correspondence, justify its publication in full. The statements of Drs. Salmon and Law are official, and are the deliberate opinions of men whose position should enable them to know the most of the subject on which they write. The outlook is very hopeful and encouraging, and Local Boards will do well to republish their letters in their local papers.

ST. PAUL, MINN., July 13, 1887.

CHARLES N. HEWITT, M.D., Secretary State Board of Health.—*Dear Sir:* I thought I would be able to get to Red Wing to-day, but I find I will not have time enough at my disposal. I wished to see you concerning the quarantine regulations of your State, and call your attention to the fact that while Dakota demands a quarantine of ninety days for all cattle coming from scheduled localities, the State of Minnesota simply requires a certificate of health from some authority residing in the locality from whence the animals have come. As a matter of fact I am at the moment holding cattle in quarantine, on Minnesota soil, that have come from Illinois. Would it not be well for you to see Governor McGill and place the matter before him. I am perfectly satisfied in my own mind that the measures adopted by the authorities in Cook County are wholly inadequate for the stamping out of the disease they are endeavoring to cope with. I enclose you a copy of our proclamation, and fully believe that should Minnesota and other leading cattle sections adopt such stringent measures, that the Illinois people would be forced to treat the matter more severely. I am of opinion that the attention of the Governor ought to be directed to this important measure.

Yours sincerely,

C. JOHN ALLOWAY, V. S.,  
Territorial Veterinarian.

The following answer was returned by the Secretary:

"July 14th, 1887.—*Dear Sir:* I beg to acknowledge your telegram and letter of 13th, suggesting that I ask the Governor to follow the action of the Governor of Dakota in requiring a quarantine of ninety days against cattle from the States mentioned in the proclamation, which you enclosed in your letter. (Minnesota cattle law, circulars, etc., enclosed.) Enclosures will enable you to correct your views as to what this Board does require, and as to who is responsible for the establishment and enforcement of isolation for infectious diseases of cattle in this State. I have submitted a copy of your letter to the Chief of the Bureau of Animal Industry, which you are doubtless aware is in absolute charge of the fight against pleuro-pneumonia in Cook County. I was there the other day and went over the whole matter with Prof. Law, of Cornell University, who represents the Bureau. I had, from this personal visit, formed a different opinion than yourself; I shall know still more on the subject when I hear from Dr. Salmon. With your view of the importance of keeping such, as you refer



to, out of Dakota, I am surprised that you did not notify me that "I (you) am holding cattle in quarantine in Minnesota," as you write you are now doing. You, of course, have no control of them here, and on your own view of the danger they may be now infecting our herds. You will therefore please write to me immediately, telling whose cattle they are; where they come from; the reason for your quarantine in Minnesota; when your quarantine began; and any other facts which will enable me to take the necessary steps for our own protection. This request is founded wholly on the statements of your letter to me. I am much obliged for your suggestions as to the action of this Board, and should have been glad to have consulted the whole subject with you before your policy was settled and published. I will submit your views to our Board at the next meeting. Meantime I am very anxious to know where the cattle quarantined in Minnesota are, that I may keep them under observation."

C. N. H.

Dr. Alloway's reply:

GRAND FORKS, DAK., July 16, 1887.

"*Dear Sir:*—The cattle that are in quarantine in Minnesota, are simply there because they failed to comply with our regulations. They have complied with yours and no doubt are perfectly healthy. By the Governor's proclamation, you will notice that a quarantine of ninety days is exacted from all cattle coming from localities named in proclamation. There is nothing very alarming about what I wrote—at least that was not my intention. I simply think that it is the duty of all States and Territories to do their utmost to compel the Illinois authorities to adopt more severe measures, and by excluding their cattle, we will eventually bring them to time. I am aware I have no jurisdiction to hold cattle in quarantine in Minnesota; but I have the power to prevent them coming into Dakota, and that is all I am endeavoring to do.

I am pleased to hear you say that they are taking active measures in Cook County under Dr. Law, and I have no doubt that if unhampered, he will very soon be instrumental in stamping out the disease in Illinois.

If you wish any further information regarding this shipment of cattle, I can get it from my deputy where they are. I expect to be in St. Paul next week and will then try to see you personally."

C. J. A.

Secretary replied July 19th.

"You will see by reference to my last letter, I asked for details of the whereabouts of the isolated herd in Minnesota, referred to by you, my object being to put them under the observation of the local authorities. Please send me immediately, the information necessary for this arrangement, and if they brought certificates and affidavits, please send the originals, or copies, that I may have all the data relating to the subject. Any uneasiness which was expressed in my letter, was founded entirely on your expressed belief as to the necessities of the case. I believe that the arrangements made for our State, will be, in the future, as in the past, abundantly sufficient; though we stand ready to change our regulations at any moment in which the necessity therefor, shall become apparent. The Bureau of Animal Industry, I have reason to know, has absolute control in Cook County, Illinois, and is heartily co-operating with the local authorities of the infected districts, further east. I should be very glad to see you at any time that convenience makes an interview practicable, and I would be greatly obliged if at any time, hereafter when you find it necessary to stop cattle within our borders, if you will kindly notify me, and send all data respecting them available, that I may put them under the immediate supervision of the local authorities."

To which Dr. Alloway replied August 21, 1887:

"The cattle that were in quarantine were at Moorhead, Minn., and so far as I know, complied in every way with the law of Minnesota when coming through the transfer. The cattle, however, have been released, and I could not say now where they are; possibly gone out of the State. The difference between your regulations and ours is simply this, that Illinois cattle, under certain restrictions, are admitted into Minnesota. In Dakota they are not admitted at all, or at least not till they have spent ninety days in quarantine, or as



much of it as we consider fit to satisfy ourselves that no disease exists. We have had very few cattle from Illinois, and I think less will come in the future. Should any more come this way I will keep you posted." C. J. A.

The States and territories against which Dakota has a ninety days quarantine, are: Illinois, Pennsylvania, New York, New Jersey, Maryland, Delaware, District of Columbia, Virginia, Vermont, Texas and the Dominion of Canada.

Dr. Alloway's letter of July 13th, was submitted, (with our law, regulations and blanks,) to Dr. Salmon, Chief of the Bureau of Animal Industry, and the following is his reply.

U. S. DEPARTMENT OF AGRICULTURE, }  
BUREAU OF ANIMAL INDUSTRY, }  
WASHINGTON, D. C., July 18, 1887. }

DR. CHAS. N. HEWITT, Secretary State Board of Health, Red Wing, Minn.—  
*Sir:* I am in receipt of your favor of the 14th inst., enclosing a copy of the letter from the Territorial Veterinarian of Dakota, and also blank permits and other documents used in Minnesota to prevent the introduction of contagious pleuro-pneumonia.

In answer to your inquiries I would say: First, in regard to the States quarantined by Dakota, I consider it reasonably safe to allow the admission of cattle from anywhere in Illinois outside of Cook County. Of course, if such cattle are accompanied by a bill of health such as you require, it makes them still safer, and I cannot see that anything further is justifiable. We have not quarantined any counties in Illinois except Cook County, because we have no evidence that it is necessary. My information is that there is some pleuro-pneumonia in Pennsylvania, but it is difficult to say how much. We shall soon undertake an inspection with the idea of getting official information. The State authorities do not co-operate with us, and I do not consider their regulations sufficient to thoroughly control the disease. In New York we have quarantined all the infected counties, and are trying to make the quarantine sufficient, but our force there is too small to keep up a thorough supervision. In New Jersey we are keeping up a supervision, and there does not appear to be very much disease there. In Maryland pleuro-pneumonia is very nearly stamped out. In Delaware there are probably no affected herds. Our recent inspections in the District of Columbia and Virginia have not discovered any acute cases, and there is certainly not much disease in either place. In Vermont there is no pleuro-pneumonia and there never has been any.

The regulations of Dakota to which you refer, are such an evident regulation of inter-State commerce, and are so radical that I have no idea they would be sustained by the courts. I feel very certain that no State or Territory has the right to make such regulations, and I fully believe that if a suit were brought against the officers enforcing them, they would be responsible for damages. I am surprised that Dr. Alloway should state that he is perfectly satisfied in his own mind that the measures adopted by the authorities in Cook County are entirely inadequate for the stamping out of the disease they are endeavoring to cope with. This work is now practically in charge of the officers of this Bureau, and is directed by Dr. Law, who is one of the ablest and most thorough men in the country for such service. We have enforced every measure, without regard to expense, which seemed advisable for stamping out the disease. He has not only slaughtered every animal in herds where the disease was found, but he has slaughtered all the cattle in the infected districts. There cannot be a more radical method of stamping out pleuro-pneumonia than this, and if Dr. Alloway is not satisfied with it, it would be interesting to know what measures he would recommend. Very respectfully,

D. E. SALMON, Chief of Bureau.

#### SANITARY INSPECTION REPORTS.

ROCHESTER, (C.) DR. F. R. MOSSE, M. D., H. O.—I have the honor to submit the following report of sanitary transactions of the City of Rochester and the sanitary condition found during annual inspection for 1887. Our city health ordinance requires the Local Board

of Health to make report once a year to the City Council concerning the sanitary needs of the city.

I submitted such report on May 2d last. I referred to the great accumulation of garbage and filth in the streets and alleys, saying it was customary at this time of year to throw out the accumulations of filth of the winter. It was offensive and deleterious, causing great danger of typhoid fever, diphtheria, and other epidemic diseases. I recommended the appointment of one or more scavengers, their fees to be regulated by ordinance, who should be required to carry away all garbage, and the citizens be required to deposit it in proper receptacles for the scavengers.

Sewerage of the city is absolutely needed, and it should be undertaken under the advice of a competent engineer. Proper dumping places for offal should be provided. It is customary for butchers, in the winter, to slaughter chickens and small animals in the cellars of their meat markets, and blood and offal accumulated there. I examined some of those cellars and found them a nuisance. The owners had promised to clean them up. The slaughtering is now done at separate slaughter houses; they should all be accumulated together at an abattoir, or public slaughter house. Dr. Staples, Health Officer of Winona, reports that the abattoir there works well. The establishment of the water works on Bear Creek necessitated the removal of two slaughter houses and a rendering establishment, and perhaps a soap factory, on that stream.

*Privy Vaults*—Are the worst nuisances in the city. It is a custom, when a vault becomes full, to abandon it or fill it up, and dig a new one. The Council should prohibit the filling of old vaults without first emptying them. The great number of privy vaults is contaminating the soil and endangering the health of the citizens. The Central school house vault should be cleaned out. Vaults should be superseded by dry earth closets, which are simple, cheap and inoffensive. Vaults should be emptied and converted into dry earth closets. I quote the following directions as to the construction of dry earth closets:

A few points ought to be observed in their construction and use. The bottom of the closet should be simply the ground, and raised a little above the surrounding ground, so that no surface water will run into it. Then from three to six inches of perfectly dry earth should be sprinkled on to receive the droppings, and below the seats the privy should be latticed, so as to allow free circulation of the air over the droppings. This is all that is needed for construction. Such a closet might be attached directly from either story of a dwelling, being made to resemble outwardly a bay window. The earth to be used should be ordinary mould, such as is good for garden cultivation (not clay), well pulverized and perfectly dry. A barrel of it will last an ordinary family two or three months. A chest of it should be kept in the closet, and once each day a small portion of the dry earth should be taken up with a little shovel or scoop, and dropped upon the exposed portion of the deposits of the last twenty-four hours, just sufficient to cover it lightly. Five per cent. of coarsely powdered charcoal adds greatly to the deodorizing and disinfecting properties of the dry earth. If dry earth closets are used at all, they should be properly constructed and kept, and it would be appropriate to make regulations in regard to them. The covered troughs used in many places are worse than vaults.

The stock yards are not in a salubrious condition. The drainage is not good, and manure has accumulated; neighbors complain of its offensiveness. The Board of Health has ordered it cleaned, which it is expected will be done; if not, the Board will call on the Council for assistance. I asked the authority of the Council for getting a health chart of the city, to cost forty dollars.

On motion of Alderman Mayo, seconded by Alderman Wagoner, the report was unanimously accepted and laid on the table for future consideration.

As a result of this report, the following ordinances were passed at the next meeting of the Council, May 7th:

#### ORDINANCE NO. 88.

*The Common Council of the City of Rochester do ordain:*

SECTION 1. That section three of said ordinance No. 21, entitled "An ordinance to provide for the cleaning of all streets, alleys, lots and blocks in the city of Rochester, and for keeping them clean, and for the punishment of persons committing or maintaining nuisances," be and the same is hereby amended by adding at the end thereof, as follows: "All privy vaults constructed without a vault at least five feet in depth, shall be daily disinfected with a sufficient quantity of dry earth or dry ashes. Nor shall any such privy vault be made the recipient of any rain, slops or chamber water, and all such vaults shall be so constructed that the rain or surface water shall not have access to the contents thereof. No person shall fill up or cause to be filled up, with dirt or any other substance, any vault without first removing the contents thereof, and thoroughly cleansing the said vault."

SECTION 2. This ordinance shall take effect from and after its publication.

Dated Rochester, Minn., May 7, 1887.

A. NELSON, Mayor.

Attest: E. B. BEETON, City Recorder.

[Official seal of said city.]

On motion of Alderman Wagoner, seconded by Alderman Doig, the ordinance was unanimously passed. The city attorney also presented the following ordinance, drawn pursuant to instructions at the last meeting:

#### ORDINANCE NO. 89.

An Ordinance for the preservation of health and the suppression of disease.

*The Common Council of the City of Rochester do ordain:*

SECTION 1. All persons owning or occupying any premises within the limits of the city of Rochester, their agents and servants, are hereby prohibited from throwing, dumping or placing in the streets or alleys of said city, or upon the surface of the ground, or into any place where the same can drain upon the surface of the ground, whether such ground is owned or

occupied by them or not, or into any privy vault or dry earth closet, any scraps or waste from the kitchen, or any vegetable or animal substance, or contents of spittoons, or swill or slops, or any other offensive material.

SECTION 2. Every person owning or occupying any premises in said city in which there shall be any offensive material as hereinbefore stated, shall provide a suitable receptacle, which shall be a substantial water-tight vessel, and painted inside and out, and kept in a place accessible to the street or alley near the rear of such premises, and in a place protected from rain and snow, into which receptacle shall be placed all scraps, waste, slops and offensive material hereinbefore mentioned, which receptacle shall be emptied and cleaned during the months from April to October inclusive, in each year, not less than twice each week, and during the balance of the year not less than once in each week; provided, however, that the Board of Health of said city may authorize any person to make any other disposition of any of such offensive material that they may deem not injurious to the public health.

SECTION 3. Any person violating the provisions of sections one or two of this ordinance, or neglecting to comply therewith, shall be deemed guilty of a misdemeanor, and upon conviction thereof before the city Justice of said city, shall pay a fine of not more than fifty dollars, and the costs of prosecution, and in default of payment thereof, may be committed to the city prison of said city until said fine and costs are paid, not exceeding sixty days.

SECTION 4. The Common Council of said city of Rochester are hereby authorized to appoint one or more persons to remove and empty the contents of such receptacles herein mentioned for the depositing of such offensive material, who shall be known as the city Scavengers, and whose term of office shall expire on the first Monday of April in each year, and who, before entering upon the duties of their office, shall execute to said city of Rochester a bond in the sum of \$500, with sufficient sureties, to be approved by the Common Council of said city, and thereupon the city Recorder shall issue licenses to said Scavengers; provided, that nothing herein contained shall be construed to prohibit any person, his agents or servants, from removing and emptying the contents of the said receptacle for holding such offensive material, but such removal shall be done in such a manner as not to become a nuisance, and as may be prescribed by the Board of Health.

SECTION 5. It is hereby made the duty of the said city Scavenger, on request of any person desiring him, to remove and empty the contents of such receptacle for holding such offensive material, and upon being paid or tendered in advance a sum not exceeding fifteen cents per barrel of thirty-one and a half gallons or fractional part thereof, and the same shall thereupon be removed by said Scavenger within twenty-four hours thereafter. The said Scavenger shall perform the said service under the direction of the Board of Health, and shall deposit all accumulations taken from said receptacles for holding such offensive material, in some suitable place, to be designated by said Board of Health. It shall be the duty of said Scavenger to use a water-tight box or tank in carrying away said offensive material, and the same to be approved by the Board of Health. The Scavenger shall also report to the Board of Health any violation of any of the provisions of this ordinance, and also any offensive privy vaults.

SECTION 6. For any failure or neglect of said Scavenger to perform the duties of his office, or for demanding and receiving any greater sum than is hereinbefore provided for the removal of said offensive material, said Scavenger shall be guilty of a misdemeanor, and upon conviction thereof before the city Justice of said city, shall be fined not to exceed the sum of fifty dollars, and the costs of prosecution, and in default of payment be committed to the city prison for a term not exceeding sixty days.

SECTION 7. This ordinance shall take effect and be in force from and after its publication. Dated Rochester, Minn., May 7, 1887.

Attest: E. B. BEETON, City Recorder.

A. NELSON, Mayor.

[Official seal of said city.]

The above ordinances are working well so far, and promise good results, especially the making of the city Scavenger a sanitary inspector reporting to Board of Health.

Population, 5,000.

*Annual Inspection.*—All citizens notified to clean up by newspaper notice one month previous to inspection, which was made latter part of May and first of June, occupying seven days, every premise in the city being visited. On 247 of these, some attention was needed in the way of cleaning privy vaults, removing manure and garbage, or providing and properly keeping slop barrels; 154 privy vaults were ordered cleaned. About 1,000 premises were found in good sanitary condition.

*Streets* all clean.

*Alleys* also, except for an occasional manure or garbage heap.

*Hole-in-the-ground Cess Pools and Privies* in no case with water-tight walls, and nearly all with no wall, are used on majority of premises, and in some cases too near a house or well, and all of them great nuisances.

*Dry Earth Closets* are on the increase, but few are in use yet, however. Thus the purity of the soil is destroyed, and water supply from wells rendered unsafe.

*Water Supply.*—At present altogether from wells or cisterns, and some of it very unhealthy. Water works are being put in, and an analysis of the proposed supply, as made by you, indicates very excellent water.

*Analysis*—Total solids, 24.8 parts per 100,000; volatile solids, 1.6; chlorine, 0.29; oxygen consumed by organic matter, .0598; free ammonia, .0085; albuminoid ammonia, .0015; nitrates and nitrites, none; total hardness, 14.5, Clark's scale; temporary, 8.5; permanent, 6. A clear water, with no smell, taste or sediment. "So far as sanitary qualities as a drinking water are



concerned, it is above reproach, and is, I think, the purest sample of well water I have examined for a long time.—H.

This will supply the public parts of city by drinking fountains, all public buildings and private families, if the latter can afford to pay rent and plumbing expenses.

*Public Buildings.*—The Board of Education have contracted for the Rutan system of heating and ventilating, and dry earth closet system for the Central School building, which accommodates 600 children. This will do away with the large hole-in-the-ground privy, the greatest nuisance in the city, and give good heat and ventilation. The ward buildings are well heated and ventilated by means of the Whitney system.

A new *County Jail* and Sheriff's residence is being built, to be commodious and well ventilated and heated, at a cost of \$20,000.

*Churches* are all well ventilated.

The two *Opera Houses* only ventilated by windows and doors, and heated by stoves.

*Hotels* in good sanitary condition.

*City Hall and Lock-up* ventilated only by doors and windows, and heated by stoves.

*County Court House* heated by stoves, and ventilated by doors and windows.

*Second Hospital for Insane* is well built, and is cared for by Superintendent J. E. Bowers, M. D., in a model manner.

*Epidemic and Contagious Diseases.*—Scarlet fever appeared May 20th, since which there have been twelve cases; no deaths; will probably spread no further, quarantine and disinfection being used, and circulars distributed. No other infectious or contagious diseases have appeared this year.

*Vital Statistics.*—Since March 1st effort has been made to collect data of births and deaths, all parties being notified by occasional references in local papers, and by distribution of Secretary Hewitt's circulars, with result that all births and deaths have been reported.

Death rate for quarter past being three per thousand per year, including one death from accident, one from old age, two from consumption, and one from infantile convulsions.

Birth rate being 27 3-5 per thousand, forty-five being reported.

*Sewerage.*—Natural drainage good towards Zumbro River, which passes through the city. We need a sewer system, however, and there is good prospect of its being developed.

*Offensive Trades.*—The large railroad stock yards are located in the midst of a considerable population, and are a constant nuisance, although cleaned occasionally.

*Contamination of Streams.*—Zumbro River has dumped into it all the sewerage, night soil, etc., from the city. Its water, however, is not used for domestic purposes. Silver Creek, a tributary of Zumbro River, receives all of the sewerage from the Second Hospital for the Insane, which spoils it for use of stock in pastures, of which there has been more or less complaint. Bear Creek has located on its banks within one or two miles above the water works well, one soap factory, one rendering establishment and two slaughter houses, drainage from all of which runs into the stream. The well is two rods distant from the creek, is sunk considerably below the bed of the creek, and is lined with boiler iron. The water from it shows no effect of contamination of the stream.

*General Health.*—Excellent. Death rate very low, and general sanitary condition first-class.

ST. CHARLES, (C) WINONA Co., DR. C. N. CLARKE, M. D., H. O.—The annual inspection of the city was made the first week in May, as the law directs. We found no very bad nuisance or garbage injurious to health, with two exceptions, and those were removed—one was being removed immediately. We were very much pleased with the way people had cleaned up their places, with the exception of the railroad stock yard. We think we have as thoroughly clean city as any in the State. Our city is situated in a rather bad valley, and at the same time is quite easy of surface drainage; no standing water. A small stream, a branch of the White-water, runs through the nasty part of the place; mostly spring water, so we have no malaria or particular source of disease or sickness.

There has not been a case of diphtheria or scarlet fever or other malignant disease reported in the city the past year. I have no reason to think there has been any. Our public school buildings have been carefully watched over by the Clerk of the Court, Mr. E. Hill, one of the Board of Health also, and is in a very clean and healthy condition. So I can say in closing this report that I think our people not only see the benefits derived from cleaning up their places in their general health, but also take great pleasure in the work of trying to make their places look better.

GAYLORD, (V.) SIBLEY Co., D. N. JONES, M. D., H. O.—*Scarlatina* broke out here about



ten days ago in the family of one Aug. Ormundt. I at once called a meeting of the Village Board of Health, and we disinfected and quarantined the premises at once. Two children were down with it, but are now convalescing nicely. I think our quarantining has safely secured us from a spread of the disease. We made our regular May inspection, and found the village in a good condition, with a few exceptions, which we had corrected at once, and at present we are free of all nuisances except a creamery which is located within our incorporation. We have worked and devised different means by which to abate the stench arising from it, but we are not successful, and I think the only way to get rid of this nuisance is to have the whole business moved out. When we talk of having it moved, we meet with too much opposition from parties interested in it, to have it done. I think creameries should not be allowed within the corporate limits of any village. I know of several other villages in this county cursed by the same nuisance. It certainly would be a good thing if we had a little legislation on this matter. There is plenty room outside the corporations for the location of these creameries.

Attention called to chapter 222, laws of 1885.—H.

AUSTIN (C.) MOWER CO., THOS. PHILLIPS, M. D., H. O.—I am glad to report to you that I find the city of Austin in a good, sanitary condition. I made my inspection tour during the latter part of May, and was happily surprised to find that with few exceptions, manure piles were removed, slop sink-holes could not be discovered, and hog-pens were scarce. The dry spring weather has made even the marshy portions of our city dry and healthful soil. It was very pleasant to notice how many low lots and sink-holes were being filled up and sowed with grass. In many places I noticed that superfluous shade-trees were being cut down to give the sun a chance to peep into the bed-room and cellar and to dry off the damp, yellow walls of the house.

While scarlet fever raged piteously in neighboring villages, we fortunately escaped with only a few cases in one family on the outskirts of the city from which it did not spread at all.

No case of small pox or diphtheria has been reported to me this last year.

Last fall and during the early part of last winter, cases of typhoid fever were quite numerous in the city, but as this disease is not considered contagious in the same sense as diphtheria or scarlet fever are, I did not think it needed our special supervision. I did, however, inquire closely into the condition of the drinking water, the usual source of contagion, but could not determine upon any one thing as a cause for it. One case had drank water from the court house well; another from another public well of the city, and a third was drinking water from a neighbor's well which tasted as good as spring water, and must have been a clean one. Such facts did not throw my suspicions upon the water supply, hence I did not send any to Red Wing for analysis. We had had a very dry fall, and water in most wells was very low. Some wise heads think that these low wells contain of necessity a greater percentage of organic matter than usual—enough to create an epidemic of fever. This is a clever theory but one which will not, I fear, bear close inspection and investigation. I am of the opinion that the water had nothing to do with causing the outbreak and that we must look to some other source for its real cause.

Since the 8th of March of this year the work of collecting vital statistics within the city has been put upon the health office. Up to date my book shows six births and two deaths.

The work of the Local Board of Health may at first sight seem an insignificant one. Yet in the short time I have been Health Officer of the city, I have noticed a change with reference to cleanliness. If we do no more for this city than to enforce habits of cleanliness about stables, water closets and the like, we will do the city a great and lasting good. The people will soon catch this important idea, that it is just as criminal to pollute the air we breathe as to pollute the food we eat and the water we drink.

No case of infectious or contagious disease has been reported to me within this last year.

The stock yards located within the city limits have been kept exceptionally clean, giving no just cause of complaint against them.

From every department of health with which we have to do I have nothing but a favorable report to make.

NORTHFIELD, (C.) RICE CO., W. A. HUNT, M. D., H. O.—The May inspection consisted as usual of a thorough search for nuisances and sources of filth, orders being served where needed. The Health Officer was assisted by the full Board in the inspection. Special attention was given to the requirements of a city ordinance forbidding hole in the ground privy vaults and require suitable above-ground structures. We are removing this form of nuisance as fast as possible.

By co-operation of street commissioner, streets and alleys have been filled or drained of stagnant water in places where pools and ponds previously existed.

During past year we have had outbreaks of measles and scarlatina but with no deaths, the diseases being confined to a few cases each. The Health Officer visited at request of Secretary of the State Board, cases of imported small pox in adjoining township, a full report of which may be found in No. 7, Vol. I, of PUBLIC HEALTH.

Many samples of well water have been tested and several sent to Secretary of State Board for confirmation and more complete analysis. The hotels, public schools and buildings of Carleton and St. Olaf colleges were visited to ascertain as to water supply, sewage systems, ventilation and fire protection and in the main were found satisfactory.

Three cases of glanders were examined, two of the animals being instantly killed, and one set free on veterinary surgeon's affidavit.

The May inspection found our city well advanced in a general cleaning up and in quite a satisfactory condition to the examining board.

DASSELL, (V.) MEEKER CO., J. H. KAUFFMAN, M. D., H. O.—Having made a thorough sanitary inspection of the village, I found everything in good condition, except one privy, which was in a very filthy condition, and not ten feet from kitchen door; had the same removed. There has been complaint made about the drainage from the woolen mill not being carried off as it should be, and upon inspection found the ditch with six or eight inches of stagnant water and coloring matter from off the dyes, producing foul odor, not wishing to take action upon it until I consulted the State Board of Health. Will draw plat of that portion of town and send same to State Board of Health.

June 24, H. O. reported: Since writing you I have ordered drains to be cleaned out thoroughly, and the last two heavy rains has completed the work, and ever since they have been running nicely. I think there will be no further complaint in the matter.

ATWATER, (V.) KANDIYOH CO., J. S. GIBSON, M. D., H. O.—Gentlemen of the Local Board of Health: In making this, my annual report, I am pleased to be able to state that the past year has been quite a favorable one for our community, there having been but little sickness with comparatively but few deaths. The epidemic of measles which we had during the winter being the only one of the season, and that was but light, owing principally to your prompt action in closing the public schools. Our people are apparently becoming interested in the great sanitary work, for with a very few exceptions and without much urging, they have their premises well cleaned up, all apparently feeling the importance of this great preventive measure of sickness. I wish to call your attention to the sloughs in the north part of the village; they are unquestionably quite serious nuisances, the worst by far in a sanitary line with which we have to contend. They are the constant receptacle of a large amount of filth; animal and vegetable decomposition is continually going on in them, and would earnestly recommend to your consideration the subject of draining them.

GLYNDON, (V.) CLAY CO., E. W. LOVELL, M. D., H. O.—It gives me pleasure to report the present fine sanitary condition of the village of Glyndon, for a prairie village. On inspection I find that all cellars have been cleaned, and all garbage and manure removed, with the exception of two instances, on unoccupied property, and the owners have been notified to clean up. There are forty privies in the village, of which twenty-one have tight boxes, thirteen have holes in the ground, and four have neither holes nor boxes. All have been cleaned and disinfected. There are nine deep wells in the city, varying from 125 feet to 215 feet in depth, four of which are flowing wells. There is one surface well eighteen feet deep, bricked up from the bottom, and two feet above the surface, and the brick are laid in cement. There are six cisterns in the village, constructed of brick and cemented. The village is very nicely drained for a prairie village, the streets being all graded, and the water conducted by graded county and town roads to North and South Buffalo Rivers, and to coolies on each side of the village. There are no contagious or infectious disease in the village. In fact the village is *distressingly* healthy.

PINE CITY, (V) PINE CO., DR. A. M. WOOD, M. D., H. O.—I have made a careful inspection of the village, and find the same in good sanitary condition.

OSSEO, (V) HENNEPIN CO., DR. N. J. PINEAULT, M. D., H. O.—I have made the inspection of the village, and find everything in a healthy condition. No epidemic or contagious diseases.

TUKUA, (Tp) BIG STONE CO., WM. NASH, TOWN CLERK.—Committee on inspection reported May 31st that they had visited every house in town, and examined in particular all cellars, privies, etc., and recommended whitewashing. Found not a single case of disease or sickness of man or animal in town.

FARMINGTON, (V) DAKOTA CO., DR. E. D. ABELL, M. D., H. O.—The Board of Health of Farmington made its annual sanitary inspection on the 16th inst., as by law required, and the Health Officer reports as follows:

*Privies.*—130 privies were noted: very little change from last year as to vaults, but these on the whole were in much better condition, having been cleaned in very many instances. The owners of all in a bad condition were notified.

*Streets and Alleys.*—These were with very few exceptions, in very good and neat condition.

*Backyards and Stables.*—A few stables had not removed the horse manure, but only a few, and the Board obtained promises that these should be attended to immediately. The yards were in better order than usual.

*Cellars.*—These were generally, so far as examined, in good condition, and cleared of vegetable matter liable to decomposition.

*Drinking Water.*—This is now obtained almost entirely by means of "drive wells," with iron pipe and iron pumps, and is chemically a very fair drinking water, the solution of magnesian limestone being no serious objection with most people, the only source of contamination to be feared being the privy vaults, which in many cases are too near the wells. It seems time alone, and constant hammering at the people on this subject, will effect the desirable change.

*Diseases of Man.*—There has been no epidemic or other prevailing sickness the past year in the village. A very few sporadic cases of scarlatina, in mild form, and a very little diphtheric sore throat, readily amenable to treatment, being all the contagious disease which has appeared.

*Diseases of Animals.*—No glanders or pleuro pneumonia reported. After our sanitary inspection the Board voted to have the result as noted by the Health Officer, printed in the Dakota County *Tribune*, that the people might read and receive the meed of praise which seemed to be their just due for the effort they had made to carry out the directions of the Board. A copy of the *Tribune* containing it I will send herewith.

CLEARWATER, (V) WRIGHT CO., DR. E. HUBBELL, M. D., H. O.—Dr. Hewitt: I herewith send you a copy of the annual report of the Health Officer to the Local Board of Health, should have sent it in sooner, but was delayed by the absence of one of the members of the Board. The report was adopted, and the suggestions of the Health Officer ordered executed. Notice of abatement or compliance with orders of Board ordered served on violators of orders. Printed notices were ordered to be posted up in privies, stables and other unwholesome places for owners to keep these well disinfected and deodorized. People are a little slow, and think we have high-fangled notions, but are being educated to the importance of sanitary affairs. We are pushing it to the front as fast as possible.

*Report:* The sanitary condition of the village is good; better than last year. Most places have been cleaned up; some in excellent condition; others have not yet finished their work, while a few have paid little or no attention to order I. I noted only a few privies built on approved plans; some in a deplorable condition, and I recommended we take more active measures to secure a better sanitary condition in this respect. I also recommended that notices be served on all persons who have not complied with orders I, II and III. In all other respects the village is in good sanitary condition.

BENSON, (V) SWIFT CO., J. S. EATON, M. D., H. O.—In compliance with the law requiring me to report the sanitary condition of our village to you during the present month, I have the honor to submit the following: I have made a thorough inspection of the village, and find a greater part of it in a very satisfactory condition. Manure, garbage and rubbish, the accumulation of the past winter, have been very generally hauled off, burned, or otherwise disposed of; those who are still behind in the work have been notified to comply with the orders of the Board at once.

Since my appointment as Health Officer there have been no cases of contagious or infectious diseases in our village or vicinity, to my knowledge, except one case of measles and one case of mumps, both now entirely recovered, and no likelihood of any further spread of either disease.

BIRD ISLAND, (V.) RENVILLE CO., F. L. PUFFER, M. D., H. O.—The May inspection found a much better condition of things than last year. The people were willing to clean up and remove sources of filth and disease when notified. The village now is in a good sanitary condition. Number of cases of scarlet fever during past year, two. These were quarantined and disinfected and disease kept from spreading.

HECTOR, (V.) RENVILLE Co., DR. F. L. PUFFER, M. D., H. O.—About all of the garbage and filth has been removed from the streets and alleys, and the village is in good condition as far as sanitary matters go. Remaining filth will be removed. No infectious or contagious diseases during the year.

ANOKA, (C.) ANOKA Co., DR. A. W. GIDDINGS, M. D., H. O.—Report of the Health Board of the city of Anoka for the year ending March 31, 1887:

Number of blocks inspected during the year, 36; number of dwellings, 195; number of business houses and mills, 94; number of people in the 36 blocks, 795; number of people vaccinated, 598; number of people not vaccinated, 161; number of cases of scarlet fever quarantined, 17; number of cases of scarlet fever recovered, 15; number of cases of scarlet fever fatal, 2; number of cases of diphtheria quarantined, 2; number of cases of diphtheria recovered, 2; number of privies inspected, 202; number of privies inspected with boxes and dry earth, 43; number of privies inspected with brick and cement, 17; number of privies inspected with hole in ground, 142; number of privies inspected cleaned by scavenger, 49; number of feet of night soil removed by scavenger, 1,015; number of horses buried, 11; number of horses quarantined for glanders, 3; number of horses condemned, 2; number of dead sows buried, 3; number of dead dogs buried, 5; number of nuisances abated, 35; number of deaths, 79; number of births, 134.

City officers being unwilling to enforce the health ordinance, we suspended further inspection until time or death should remove them and others elected, and now we hope to accomplish more in the future.

Supplementary report of Health Board for May, 1887: Number of premises inspected, 867; number of people occupying said premises, 3,576; number of people vaccinated, 2,994; number not vaccinated, 1,186; number of privies cleaned, 48; number of cubic feet of night soil removed, 1,140; number of dead dogs buried, 6; number of nuisances complained of and removed, 10; number of days inspectors employed, 23½; number of deaths reported, 8; number of births reported, 4.

I have the satisfaction of reporting the city in a better condition than ever before, and less opposition in enforcing the law.

PRESTON, (V.) FILMORE Co., DR. G. A. LOVE, M. D., H. O.—The sanitary condition of the village is found greatly improved at this annual inspection, compared with that of last year. Orders of the Board as to removals of garbage and other offensive matters generally complied with.

*The Yards* around the buildings have all been cleaned up and rubbish burned.

*The water supply* for drinking purposes is obtained from wells, with two or three exceptions, where it is obtained from springs.

*Streets and Alleys* are in good condition.

*Stables and cow sheds* are clean and in order. Several heaps of manure have collected in different parts of the city. Notice to owners of property having manure heaps on their grounds to remove them.

Notice to trustees of public school of the privy on school ground to being faulty in construction and foul; the old one to be cleaned and put in a sanitary condition.

It is *distressingly* healthy in the village at this time.

## INFECTIOUS DISEASES REPORTED DURING THE MONTHS OF JUNE AND JULY.

### DISEASES OF MEN.

		June.	July
Diphtheria.....	{ cases,	38	41
	{ deaths,	13	14
Scarlatina.....	{ cases,	21	19
	{ deaths,	2	1

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	30	19
Reported during the month.....	22	22
Killed.....	21	14
Released.....	12	1

Remaining August 1st isolated or not accounted for.....26



# PUBLIC HEALTH IN MINNESOTA.

—THE—

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH.

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WHOLE NO. 30

CLEANLINESS NOT THE CHIEF END OF HYGIENE, NOR ITS SOLE MEANS FOR THE CONTROL, OR PREVENTION, OF DISEASE.—Dr. Edward Seaton, in the introductory lecture of his course on Public Health, at St. Thomas Hospital, the other day, called attention to the fact, "That the advocacy of cleanliness was not the sole object of sanitary workers, because much more than that was necessary for the prevention of disease. Our knowledge of disease causes is still in its infancy, and until these causes are fully understood, it is impossible to define the means by which it shall be prevented." Vaccination is not a method suggested by cleanliness. The specific living germ of typhoid fever, or any other infectious disease, may, and often does, exist in air, water or food, absolutely pure, so far as our means of recognition can affirm, and through them may communicate such disease to persons using them. One serious consequence of the "Gospel of Cleanliness," pushed to a common extreme, has been to define Hygiene in the terms of this "Gospel" as an art whose rules are already clearly made out and understood, so that its practice is, after all, but a very easy application of those rules to the necessities of any case, and possible to any one who has the "rules" learned by heart. A beginner in Hygiene, who has been properly taught, knows better than that, but a reference to the average school-book and school instruction, will show that hygiene is taught very much as other subjects, grammar for example; and by teachers who have no practical familiarity with the subject. Now, while such instruction is worth something, it is a good ways off from what it should be. We refer to it here because intimately related to popular education, the importance of which all understand, but which must be right to be valuable. Fortunately it is not necessary to prove that a large proportion of the work of personal and public hygiene is as positive and certain in its methods and results as similar work in other departments of life saving, but we must never forget, nor permit others to do so, that Hygiene is a science, and an art, and as such is, in proportion to its advance, experimental in methods, calling constantly for experience in its use, as well as familiarity with its literature and the methods of the past. Here is one of its greatest dangers. Current literature is full of enthusiastic attempts to substitute theory for tried facts as guides to every day work, notably in dealing with public water supplies, and the disposal of sewage, and other refuse of towns.—H.

## PREVENTIVE MEDICINE.

INTIMATE RELATIONS OF HYGIENE TO THE EVERY DAY PRACTICE OF MEDICINE.—Prof. Gardner, of Glasgow, in a very able address on Medicine before the British Medical Association, at Dublin the other day, and speaking of hygienic remedies, says:

"The prevention and the cure of disease are not identical, but the laws which guide the former are, in a large measure, and necessarily applicable to the latter. The same noxious influences which beget typhoid fever, for example, tend, in a remarkable degree, to exaggerate, if not to cause, a host of minor diseases, and very notably, to increase the risk of, the healing of wounds, and of the puerperal process. It is impossible, in the face of modern sanitation, to escape the conclusion that the causes, and remedies alike, are often sought more in the study of groups and even of multitudes of cases, than in the ordinary text-books or in the conventional remedies set down for the particular *nomen morbi*. In short the treatment of dis-

eases, of every kind, has been largely, even if silently, influenced by the thought that the chief disease-breeding factors must also be, in individual cases, adverse influences to be carefully studied, and kept in check, by those who cure disease."

These are noteworthy words, voicing the conviction which is growing among thoughtful physicians, of the increasing value of hygiene, in the every day work of our art. Here is another excerpt from the same address:

"The changed point of view implied in the more fruitful, and practical, study of causes, has, in many cases, made it impossible to cling to the old and traditional, aspect of certain diseases, as entities, arising we do not know (and do not strive to know) how, and only to be met by a *farrago remediumum* addressed to individual symptoms, or, at least directed to the consideration that a morbid influence, or something unknown, had got to be battered down in the recesses of the economy, by sheer expenditure of therapeutical violence at whatever cost, to the physiological functions of the sufferer."

**SCARLATINA IN EDINBURGH.**—(Report of July 20, 1887.)—A very careful resume of five hundred cases in hospital develops a few points of practical value:

*Temperature.*—At maximum on second or third day. *Desquamation*, invariably present, began from the fourth to the sixteenth day, the majority on the tenth.

*Sore throat.*—The primary sore throat always preceded the rash.

*Complication.*—Nephritis, commoner in cases of distinct milk infection than when infection had other origin. Out of 200 cases specially recorded, thirteen had rheumatism, thirteen glandular enlargement of the neck, seven nephritis, four diphtheritic sore throat, and four inflammation of the ear.

*Prophylaxis.*—Particular attention is called to the use of inunction. We are glad to find so hearty endorsement of this very old and very valuable method of dealing with the peculiar poison as it escapes from the skin. We have not found the addition of carbolic acid to the simple ointment used, at any advantage; on the contrary, several Health Officers have declared against it, as adding rather to the distress of the patient, than the prevention of the diffusion of the virus.

*Mortality.*—The epidemic was very general, but mild, as the death rate indicates; 3.6 per cent.—H.

**IS HUMAN SCARLATINA DERIVED FROM THE COW?**—Dr. Klein's conclusion that it is so derived, through the medium of the milk, has very naturally occasioned much professional, and popular anxiety. Some of the English Health Officers and sanitary journals, seem inclined to advise that *all* milk intended for infant food should be boiled, to avoid possible danger. The matter is admitted, on all sides, to be of the utmost importance, and despite disagreement as to the conclusion to be drawn from them, there is happily no dispute as to the facts offered by Dr. Klein. In the July No. of *The Veterinary Journal*, of London, Geo. Fleming, the editor, representing the very best of his profession in Great Britain, writes:

"Dr. Klein's experimental proofs are apparently sound, so far as they go, but it may be questioned whether they go far enough. We cannot experiment on our fellow creatures in order to ascertain, in a positive and undeniable manner, whether an eruptive disease of the cow will produce scarlatina; but in order to prove the identity of scarlatina and the bovine malady, a most important point, we can try to transmit the human disease to the cow. This Dr. Klein has done, so far as we can learn, only in a few cases, but it should be attempted on a larger scale without delay, as upon its success or failure will depend the complete solution of a most pressing hygienic and pathological question."

This is a fair statement of the veterinary view of the matter. Dr. Klein's work is done under the Local Government Board, and the Government Veterinary Service is in the Agricultural Department Privy Council Office, so that it is but right to expect the last to review, by a series of equally satisfactory experiments, Dr. Klein's conclusions, and so help to settle a question in which both branches of the profession have an almost equal interest.—H.

**M EASLES AS AN INFECTIOUS DISEASE, NOTIFICATION OF**—The Sanitary Committee, of Newcastle, England, by a vote of fifteen to five, asked the City Council to insist upon such notification.—H.

**CONSUMPTION.**—The Bergeon treatment has already had a very extensive, and promiscuous, trial. Its theory is the destruction of the specific cause by enemata of sulphuretted hydrogen gas, in carbonic acid gas as a vehicle. Testimony varies exceedingly, even reputable, testimony. Most agree upon a decided amelioration of the most distressing symptoms, improved digestion, and so improved appetite, and increase of weight. There seems almost as much unanimity in the belief that the essential conditions of the disease are unaffected directly. There is enough of sound encouragement to justify thorough trial, and we sincerely hope some of our Health Officers will treasure their experience from the stand-point of its influence in staying, even temporarily, the progress of this disease. It would be well if some of the most enthusiastic of the advocates of this method would remember what they seem likely to forget, that the rectum is not the most desirable route for remedies, and that inhalation is far from exhausted. It seems likely that the purification of apartments, with a view of keeping them supplied with abundant fresh and pure air for the sick one's use will supplant the less efficient method of the ordinary spray. Such air could then be adapted to the peculiar needs of the patient without losing its normal purity and value.—H.

**THE PERMANENT BATH AS A REMEDY.**—Its regular or occasional use to this end is a very old expedient, but the proposition to make its use to any extent, permanent, is a novelty, and will strike the average patient with dismay. The *Lancet*, in referring to its use for dropsy, notes a case of inflammation of the hip and knee joints, with pyæmia and bed-sores, in a girl of eighteen years. She was kept in a boracic acid bath for seventeen weeks, with most satisfactory results. Another case of pyæmia was kept in the bath four months; and Hebra is quoted as advising, long ago, such baths for extensive burns, and for widespread skin disease.—H.

**TRICHINÆ IN PORK.**—The following is an official report of the examination of hogs for trichinæ in Prussia for 1885; 4,421,208 examined, of whom 2,387, or one to every 1,852 were found trichinous. One hundred and one sides, and other forms, of American bacon, were found to contain trichinæ. This the sum total of the work of 21,117 official meat inspectors. The time is approaching when a portion of our male population will repeat their annual experiment with raw ham, so that these data are suggestive. *To avoid all danger from this cause, eat your ham well cooked. High seasoning, and fine chopping of the meat, are no security.*—H.

#### VITAL STATISTICS.

**CORRECT NOMENCLATURE OF CAUSE OF DEATH, OF THE UTMOST IMPORTANCE IN REPORTS OF DEATH.**—It ought to be unnecessary to impress this fact upon Health Officers and Clerks, but our study of the returns for the first quarter of 1887, show that it must be done, if those returns are to be worth the cost of their collection and registration. Here are a few of the most common mistakes: "Heart disease;" "lung disease;" "liver disease;" "cancer;" "child-bed." The self-evident mistake in all these is imperfect description. We want to know what form of disease of heart, lung, liver; what form of cancer and where located; and if in "child-bed," how? It should be evident to any one, that so much of detail is needed as will make it possible to classify the cause of death clearly, and in such form as to be advantageously studied. We are very glad to report the care and promptness of a very large proportion of the Clerks and the increase in the number who take pains to do willingly, and well, their share of the work of collecting and recording the vital statistics of our State. It cannot be long before the lagging ones will come to understand that to do this work well is not only to do one's plain duty, but to help to put our State where she is entitled to be in this, as in other departments of recognized effort.

Please note the following suggestions.

*The name and address of the attending physician.*—If these are always furnished we can correspond directly with them and save, usually, further trouble to Clerks.

*Use a blank for each month, though there be but a single birth or death to report.*—This is necessary to prevent confusion in the work of the Secretary's office.

*For any month in which there are no births or deaths to report, please send a postal card giving notice of the facts.*—This to enable us to keep your record clear, and to bring our record up to date.—H.

### SANITARY INSPECTION REPORTS.

MARSHALL, (V.) LYON CO., T. H. WIMER, M. D., H. O.—Orders of the Board published in the local paper and a printed notice sent to each resident to remove all garbage, offal and refuse, was generally complied with, being removed to dumping grounds and consumed by fire. One resident used manure to grade a very uneven lot; complaints being made. On inspection I found manure three feet deep in marshy ground. Ordered the manure to be removed at once; order complied with. Carcasses of a sheep and pig found on ground, taken outside limits and buried.

*Slaughter house*—In village limits the blood entrals and all refuse from which are thrown in a pig-pen attached to slaughter-house, causing a horrible stench and greatly annoying those living near. This slaughter-house is only a short distance from the business part of town. I inspected the slaughter-house and found the above condition; ordered it closed and removed outside limits. Order not complied with; had him arrested; the justice discharged him, holding that the Board might regulate but not prohibit. Slaughtering continued as above. [Contradicting this decision, see Sections 1 and 2, Chapter 222, Laws of 1885. C. N. H.] With this exception the town is in a fair condition.

*Infectious diseases.*—Scarlet fever, four cases during the month of April. No deaths.

ST. PETER, (C.) NICOLLET CO., G. W. MCINTYRE, M. D., H. O.—Dr. Hewitt—I herewith submit the following report, as Health Officer of this city, during the past year. I was not elected to the position until the 28th of August, but Dr. Collins informs me that there was nothing of importance previous to that date which was not included in his last report.

*Location.*—St. Peter is situated on a flat, sloping gently from the bluff to the river bank. Elevation varies from twenty-six to forty feet.

The soil is a sandy loam, below which, at a depth from ten to eighteen feet, there is a stratum of clay and gravel, impervious to water. Still below this there is a thick stratum of soft sandstone. Surface of flat is comparatively level though with sufficient slope to insure good drainage. There were formerly a few low places where ponds were formed in the spring and after heavy rains, but they have been drained by the street commissioner during the past year.

*Drainage and Sewerage.*—A number of tunnels have been dug through the sand-rock from the river bank back as far as Third street, thence laterally in either direction for a distance of one block. These tunnels are connected with the gutters by man-holes into which the surface-wash is conducted by grading the streets.

*Water Supply.*—At present the only water supply is from wells, most of which are only from ten to fifteen feet in depth, and consequently contain nothing but surface or ground water. A few families have drilled through the stratum of sand-stone and have thereby obtained a much purer supply. Through the kindness of Mr. N. M. Baker, of Red Wing, I was enabled to make tests of several samples of water from the shallow wells, and in every instance it was found to be dangerously impure. At a recent meeting of the city council a committee was appointed to examine a lake on the bluff east of the city with reference to the quality and quantity of its value. If it is found to be a suitable source of supply, mains will undoubtedly be laid to conduct the water to the city during the present summer.

(See analysis and opinion under Laboratory Notes in this number.—H.)

*Disposal of Garbage.*—Most of the stable manure is taken away by farmers into the surrounding country. Other rubbish is hauled across the river and dumped on waste-land below the city but still nearer the city than it should be. The old style of privy with a pit is used in most parts of the city, and though they are usually moved sufficiently often to prevent their becoming public nuisances, yet they are constantly polluting the soil and steps should immediately be taken to have them replaced with "dry earth" or box closets. In the more thickly settled portions of the city a man should be engaged, by contract, to remove all house-slops, etc., regularly every morning instead of permitting them to be thrown into back-yards alleys as is done at present. One of the most frequent sources of complaint, during the



hot weather, is the stench of hog-pens and hog-yards, which are still tolerated in some parts of the city.

*Slaughter Houses.*—The council has caused all slaughter-houses to be removed outside the city limits, and it is to be hoped that they will be kept there.

*Public School Buildings.*—The present system of heating and ventilating the high school building is not wholly satisfactory, and an effort is being made to have it changed. The new Alden school building is heated and ventilated by the "Ruttan System," which so far has proved eminently satisfactory. It is not improbable that that system will soon be introduced into the high school building.

*The Jail and Lock-up.*—Neatly kept and evidently in very good sanitary condition, but without any occupants.

*Contagious Diseases.*—During the past year there has been three cases of diphtheria and seven cases of scarlet fever in the city, all of which recovered. We have recently been having an epidemic of measles, but as the cases were mostly of a mild character, they were not isolated and no record was kept of them.

*Nuisances.*—Complaints of nuisances have been made in twenty-one instances, each of which required at least one pilgrimage of investigation, and many of them more than one. Most of these were abated by request. Some required formal notification and were obstinate even then. In a few instances, where the offenders could not be found, the nuisances were abated at expense of the city. The subjects of complaints were, in order of frequency: Carrion, privies, hog-pens, stable manure, and house-slops. In each instance ample cause for complaint was found, and in each case the offender was requested to abate or remove the nuisance when he could be found. Written notices were presented in nine instances only.

MADSLIA, (V.) WATONWAN CO., W. H. SHAVER, M. D., H. O. —According to provisions of the law, I have made the annual May inspection of the village of Madelia, and beg to submit the following report of the sanitary condition of said place.

I am pleased to inform you that, owing to the favorableness of the weather, etc., the health of the community has been excellent. Aside from the few recent cases of "Scarlatina Simplex," which seemingly were of a sporadic character, there has been no epidemic of any kind, whatever.

The village is situated near a large slough, which is imperfectly drained; in fact, the sewage in general is poor. Many cellars have no drains and a considerable number, too, are badly lighted and ventilated. This slough has in former years been partially filled with manure and other refuse and then covered over with earth. Here is still another great evil lurking in the village in the form of that abominable nuisance, "the closet vault," besides many lesser ones from negligence in removing manure and some persisting in keeping swine upon a ground floor, and more than the legal number. Should we have an unfavorable and wet season, I have every reason to fear the water supply would be greatly jeopardized, from surface sewage; a great many wells being shallow, poorly curbed and situated. (See analysis No. 8, under Laboratory Notes, in confirmation.—H.)

I hope, with the assistance of other members of the Board and the obedience of the citizens, to obviate these numerous sources of contamination as much as possible; but owing to the newness of the county and law on this subject and the stout opposition to be encountered from some citizens and property holders, it will be impossible to accomplish as much as I could wish during any one season.

MARSH GROVE, (Tp.) MARSHALL CO., OLE JORSTED, CHAIRMAN LOCAL BOARD OF HEALTH. —I hereby certify that I have inspected all the dwelling and outhouses in the town of Marsh Grove. There was no case of sickness; all the inhabitants are in good health. I found no diseased animals, and when there was anything that I thought was necessary to be done or removed, such as manure heap or airing the cellars, all of them seemed willing to do as I suggested and do their endeavors to prevent disease.

KENYON, (V.) GOODHUE CO., GEO. H. OVERHOLT, M. D., H. O. —After making a thorough inspection, I am happy to say that I find the place generally clean, and the people free from sickness. There is considerable manure left by some barns and stables, which I have ordered removed. It is the practice with some few of our inhabitants to dig holes in the ground in which to pour their slops. This, I think, is even worse than putting them on the top of the ground, where the sun and air can get at them. The better way would be to put into a tub and remove every few days.

Kenyon is a city on a hill, yet in wet seasons her cellars fill with water; the subsoil being clay prevents the water from going through.

I would recommend that, as soon as practicable, sewers be dug in all the principal streets, that the cellars might be drained and thereby the health of the village heightened.

Heretofore, when animals have died, it has been the custom to draw them off a distance and leave them above ground to rot and fill the air with foul and unhealthy odors. In several instances I have obliged parties to bury their dead animals. It would seem that common sense, and a consideration of the rights of others, would lead men to bury dead animals without being forced to do so by law.

We have great reason for thankfulness that we are free, so far, from epidemic diseases, and that cyclones and earthquakes have not been felt in our region.

Later—Upon the whole there is, I think, some improvement in the condition of the privies, but not in construction. The hole in the ground plan is still used, but lime is thrown in by some parties, and others clean their privies now and then, while others dig new holes and remove the building to them. As our village is not at all compactly built, so far, I do not imagine any evil results. This being a very dry season we have little or no water in our cellars.

FAIRMONT, (V.) MARTIN CO., F. N. HUNT, M. D., H. O.—Our location is high, hence our drainage is good.

May inspection found our streets and alleys comparatively clean, since the latter part of April the Board had ordered all accumulations of filth removed from streets, alleys and barns. Privies are kept clean and the hole in the ground is being done away with as fast as possible. All accumulations in and about hotel and livery barns are removed as often as once in two weeks during the summer months. Garbage from hotels is carried off and buried as often as once in four days.

Since the organization of our Board, in June, 1886, it has held its regular monthly meetings and done all in its power to better the sanitary condition of our village.

One of the greatest nuisances ever allowed to remain in a village, has this spring been removed through the efforts of the Board, viz.: a large stock yard, the same having been located on one of our principal streets for more than ten years, and owned by one of our prominent citizens.

Slaughter houses are reasonable distances from the village and well kept.

Infectious diseases of men, none; infectious diseases of animals, three glandered horses were slaughtered during the year ending May 1st, 1887.

ELLSWORTH, (V.) NOBLES CO., W. S. WEBB, M. D., H. O.—In accordance with the rules of the State Board of Health, I have made a sanitary inspection of the village. We have within our limits thirty-six privies, two of which have drains to them and are at present in good condition but will need constant disinfection as they are located at our hotels. Of the remainder all are in a bad condition. They are all merely holes in the ground, with a building over or are constructed without any hole in the ground, and all but about half a dozen contain a large quantity of half fluid filth. Several are located within thirty feet of wells and should be stopped.

Our streets and lots are fairly well cleaned, with perhaps half a dozen exceptions, the owners of which I have notified of our rulings.

We have one place for slaughtering animals, and this I find in fairly good condition.

There are no dead animals, or any decaying animal matter within our limits.

We are entirely free from any contagious or infectious disease.

We have no stagnant pools of water within our limits.

Our churches, school houses, hotels, etc., are in fair sanitary condition.

The water supply is the one thing which most needs your attention, and with the execution of your orders regarding privies and the cleaning of our wells, I believe about all will have been done that we are able to do.

NEW ULM, (C.) BROWN CO., O. C. STRICKLER, M. D., H. O.—New Ulm is a city of 4,000 inhabitants situated on a high ridge of ground on west bank of Minnesota River in Minnesota valley. The soil is of a peculiarly porous nature, drying up very rapidly after the heaviest rainfalls, thus aiding drainage to a great extent.

Garbage.—A dumping ground, one mile north of the city, is used as a burial place for dead animals and for the temporary deposit of manure and other decomposing material. The manure is finally removed by farmers and others living in the vicinity.

Slaughter Houses.—The slaughter houses are situated in a very favorable location outside of city, both as regards health and convenience.

Contagious Diseases of Men.—An important step has been taken by the present Health

Board as to the prevention of contagious diseases. As soon a case of contagious disease is reported to the health office, the secretary at once notifies the principal of the several city schools, of the existence of such case, thereby preventing other members of the family from attending school during the sickness and convalescence of the same; also, that no case exposed to such contagious disease is allowed to attend any of the city schools without a certificate from the Health Officer.

Another regulation, almost as important as the preceding, is the prohibition of public funerals of cases dying from contagious disease.

Both of the foregoing regulations are strictly enforced and will, I have no doubt, do much to prevent the spread of contagious disease in this city.

Privies.—Our present privy system (that of the deep closet, the one exclusively used in this city,) is one that should be abolished and the dry earth system substituted. It is to be hoped that people will soon see the necessity of a more proper disposal of excreta without the serious disadvantages of the present mode.

MANKATO, (C.) BLUE EARTH CO., C. F. WARNER, M. D., H. O.—The sanitary inspection is not fully completed, but so much has already developed that made it necessary to serve notices for the abatement of 47 foul privies as nuisances; 16 foul hog pens; 57 manure piles and 22 piles of other rubbish.

I am informed that the special committee appointed by the mayor to select a suitable location for the burial of dead animals, and also a depository for the contents of foul privies and other refuse material, has been accomplished; all of which will obviate much trouble that has existed heretofore in the proper disposal of the above mentioned nuisances.

The law requiring all physicians and midwives to report promptly all births and deaths to the health offices of cities, has been complied with by all resident physicians except by one and by all the midwives. As the law does not allow either the physicians or midwives or myself to exercise any discretion in the matter, the dilatory one has engaged the attention of the proper authorities.

I earnestly urge that the executive department more fully enforce the ordinance relating to the care and cleanliness of the streets and alleys, which, if fully accomplished, combined with the growing disposition manifest on the part of the public to put the immediate surroundings of their homes in a good sanitary condition, the day is not far distant when we may point to Mankato as being one of the neatest, healthiest and most attractive cities in the State of Minnesota.

SPRINGFIELD, (V.) BROWN CO., DR. THOMAS SULLIVAN, M. D., H. O.—I have made the May examination of the village. I found a lot of dead animals, which were all removed when ordered. The manure was all removed with the exception of some on the railroad land in the village. As the parties living on the railroad land do not own or lease it, the Village Attorney did not think he could prosecute them. The slaughter house has been kept pretty clean so far this spring. Pig pens are the dirtiest, and I would advise the Village Council to prohibit the keeping of swine in the village. (The Board of Health should do it.—H)

The privies are still the "hole-in-the-ground" variety, and are never cleaned, but filled up when full.

With a continuation of the "Board of Health" we might accomplish something, but with a "Board of Health" one year and none the next, it is impossible to do anything.

ZUMBROTA, (V.) GOODHUE CO., O. H. HALL, M. D., H. O.—I have the honor to report that on the 25th day of April the following notice was published in the *News*:

To Jones H. Hall, Village Marshall, Zumbrota, Minn.: "You are hereby directed to notify all owners and occupants of lots within the limits of the village to clean and cleanse, within ten (10) days from date of this notice (order), all premises, cellars and privies occupied, owned or used by them, by moving from said premises all decaying matter, either vegetable or animal, or both, and all filth or offal of whatever kind or nature."

This order has been generally observed and obeyed, and yesterday the Board made a thorough sanitary inspection of the village, as shown in the following report to the Village Council:

Report to Common Council.—Gentlemen: The Board of Health of your village have made a thorough sanitary inspection of the village this date (May 11th), and report as follows. (Here reference is made to notice published on 25th day April to Village Marshal, etc.) This order has been generally obeyed. Your Board would express the satisfaction of the general willingness of the people to improve the sanitary condition of the village. We would again call your attention to the condition of the stream running through the village, especially from the crossing of Fifth street down to Second street, including this street also. The bed of the stream

should be lowered enough to allow all stagnant water to run off. As it is, it is a prolific disease source, and endangering the health of all who live near. Everything is thrown in or dumped into it. It is unsightly, unsavory and disgusting in some parts, and should be attended to immediately.

We wish also to call your attention to the matter of selecting a proper dumping ground. Now the highway is used near the Northwestern engine house. This is also unsightly, and a blur to the good looks of our village. If the matter is allowed to continue, this will also be a prolific disease source, as most of the wells in the lower town are drilled below the rock, and water percolating from the river will find its way into these wells, as most of them are below the bed of the river.

We would also recommend that all weeds be kept cut on the streets and alleys in the village, at expense of the village, or that your honorable body order the occupants or owners of lots to keep the same cut.

We would also recommend that all trees bordering the streets and water courses be trimmed up, especially on the stream above mentioned, to allow the sunlight and air to enter.

We would express our thanks for the hearty co-operation which you have extended us in our labors to advance the sanitary condition of the village

### LABORATORY NOTES.

MAY.	SOLIDS		NITRITES	CHLOR'N	OXYG	AMMONIA	
	Total	Vol.				Free	Alb.
(8) Madelia, private well .....	...	...	...	7.2	.230	marked	....
JUNE.							
(13) St. Peter, proposed pub. supply—lake	14.0	4.0	.005	.22	.390	.0415	.0395
(14) " " " " " "	13.6	4.4	.110	.138	.635	.0310	.0470
(15) St. Peter, private well No. 1 .....	21.4	4.2	.000	.5	.125	.0065	.0069
(16) " " " " " "	50.0	10.4	.010	3.0	.050	.0027	.0026
(17) " " " " " "	62.0	20.0	.090	2.7	.120	.005	.0095
(18) " " " " " "	74.4	24.4	.0066	8.3	.255	.0155	.0167
(19) " " " " " "	59.0	13.0	.605	3.75	.075	.0035	.006
(20) " " " " " "	72.0	12.0	.200	5.6	.090	.0130	.004

No. 8.—Little doubt of this water being fouled with animal organic matter; forbid use until examined. No. 13.—Probably a surface water lake, with weedy banks, and not gaining, but rather drying up. If it could be kept free from weeds and refuse, and the surface adjacent guarded and kept to grass, it might do for city supply. Should have to visit to express a decided opinion. No. 14.—Like No. 13, but worse; not fit for public supply. No. 15.—Capital water; but probably has vegetable organic matter from moss, leaves, or surface drainage; look and see. No. 16.—Suspect surface drainage; see no other immediate danger. No. 17.—Much better than any other of this series, but volatile matter too marked. Look out for surface water. No. 18.—Suspect the well; too much volatile matter and chlorine and of oxygen used. Almost positive organic impurity. Should be thoroughly cleaned and examined before further use. Source of flocculent precipitate should be discovered. No. 19.—Fair water. No. 20.—See nothing to complain of in result of this analysis, except amount of chlorine, which is proportionately large in almost all the wells of this series (Nos. 15-20 inches). Don't like a well, either, which runs dry and begins again, unless sure source of supply is safe.

### INFECTIOUS DISEASES REPORTED DURING THE MONTHS OF AUGUST.

#### DISEASES OF MEN.

	August.
Diphtheria .....	{ cases, 40 deaths, 11
Scarlatina .....	{ cases, 34 deaths, 0

#### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for .....	26
Reported during the month .....	16
Killed .....	5
Released .....	2

Remaining August 1st isolated or not accounted for..... 35



AN ACT FOR AN ACT TO PREVENT THE SPREAD OF CONTAGIOUS OR INFECTIOUS DISEASES AMONG "CATTLE," HORSES AND OTHER DOMESTIC ANIMALS.—CHAPTER 200, GENERAL LAWS OF 1885.

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. The Local Board of Health of towns, villages and cities, in case of existence in this State of the disease called Pleuro-Pneumonia among cattle, or Farcy or Glanders among horses, or any other contagious or infectious disease among domestic animals, shall cause the animals in their respective towns, villages or cities, which are infected, or which have been exposed to infection, to be secured or collected in some suitable place or places within their respective towns, villages or cities, and kept isolated; and when taken from the possession of their owners one-fifth (1-5) of the expense of their maintenance shall be paid by the town, village or city wherein the animal is kept, and four-fifths (4-5) by the State; such isolation to continue as long as the existence of such disease or other circumstances may render it necessary.

SEC. 2. The said Local Boards of Health, when any such animal is adjudged by a veterinary surgeon or physician, by them selected, to be infected with any contagious or infectious disease, may, in their discretion, order such diseased animal to be forthwith killed and buried at the expense of such town, village or city.

SEC. 3. The said Local Boards of Health may cause all such animals that have been within the State for six (6) months next preceding the adjudication mentioned in section two (2) to be appraised by three (3) competent and disinterested men under oath, at the value thereof at the time of the appraisement, and in making such appraisement the appraisers shall take into consideration the fact of the existence of such disease, and the amount of the appraisement shall be paid as provided in section one (1), except as provided in section fifteen (15) of this act.

SEC. 4. The said Local Boards of Health may, within their respective towns, villages and cities, prohibit the departure of animals from any inclosure, or exclude animals therefrom.

SEC. 5. The said Local Boards of Health may make regulations in writing to regulate or prohibit the passage from, to or through their respective towns, villages or cities, or from place to place within the same, of any cattle or other domestic animals, and may arrest and detain, at the cost of the owners thereof, all animals found passing in violation of such regulations, and may take all necessary measures for the enforcement of such prohibition, and also for preventing the spread of any disease among the animals to their respective town, village or city, and the immediate vicinity thereof.

SEC. 6. Such regulations shall be recorded upon the records of their respective towns, villages and cities, and shall be published in such towns, villages and cities, in such manner as may be provided in such regulations.

SEC. 7. Any person disobeying the orders of said Local Boards of Health, made in conformity with the preceding provisions, or driving or transporting any animals contrary to the regulations made, recorded and published as aforesaid, shall be punished by a fine of not less than one hundred (100) dollars, nor exceeding five hundred (500) dollars, or by imprisonment of not less than thirty (30) days, nor exceeding one (1) year.

SEC. 8. Whoever knows or has reason to suspect the existence of any such disease among the animals in his possession, or under his care, shall forthwith give notice thereof to the said Local Board of Health of the town, village or city where such animals are kept, and for failure so to do shall be punished by a fine of not less than fifty (50) dollars, nor exceeding five hundred (500) dollars, or by imprisonment of not less than thirty (30) days or more than (1) year.

SEC. 9. Any member of any Local Board of Health who neglect or refuse to carry into effect the preceding provisions shall be punished by a fine of not less than one hundred (100) dollars, nor more than five hundred (500) dollars for each day's neglect.

SEC. 10. When the State Board of Health make and publish any regulations concerning the extirpation, care or treatment of animals infected with, or which have been exposed to, any contagious disease, such regulations shall supercede those made by the Local Boards of Health; and said Local Board of Health shall carry out and enforce all orders and directions of the State Board of Health to them directed.

SEC. 11. The State Board of Health, shall have all the power and authority herein conferred upon Local Boards of Health.

SEC. 12. The Local Boards of Health, within twenty-four (24) hours after they have notice that any domestic animals in their respective towns, villages and cities are infected with or have been exposed to any such disease, shall give notice thereof in writing to the State Board of Health.

SEC. 13. The State Board of Health may make all necessary regulations for the quarantine of such animals, and extirpation of such disease, and may direct Local Boards of Health to enforce and carry into effect all such regulations as may from time to time be made for that end; and any member of any Local Board of Health who refuses or neglects to enforce or carry out any regulation of the State Board of Health shall be punished by a fine of not less than one hundred (100) dollars nor more than five hundred (500) dollars for every offense.

SEC. 14. The State Board of Health, when, in their judgment the public requires it, may cause to be killed and buried any domestic animals which are infected with, or have been exposed to, such disease; and except, as provided in the following section, shall cause such animals to be appraised in the manner provided above, and the appraised value of such animals shall be paid, one-fifth (1-5) by the town, village or city in which such animals were kept, and the remainder by the State.

SEC. 15. In all cases of farcy or glanders, the State Board of Health, having condemned the animal infected therewith, shall cause such animal to be killed, without an appraisement or compensation to the owner thereof, but may pay the owner an equitable sum for the killing and burial thereof.

SEC. 16. Any person who fails to comply with the regulation made, or an order given by the State Board of Health, shall be punished by fine not exceeding five hundred dollars (\$500) or by imprisonment not exceeding one (1) year.

SEC. 17. All appraisements made shall be in writing and signed by the appraisers and certified by the Local Boards of Health or State Board of Health respectively, to the governor and to the treasurer of the several towns, villages and cities wherein the cattle appraised were kept.

SEC. 18. The State Board of Health may examine, under oath, all persons believed to possess knowledge of material facts concerning the existence or dissemination or danger of dissemination of disease among domestic animals; and for this purpose shall have all the power vested in justices of the peace to take depositions and to compel witnesses to attend and testify. All costs and expenses incurred in producing the attendance of such witnesses shall be

certified by the State Board of Health and paid from the treasury of the State upon being certified to and approved by the governor.

SEC. 19. Whenever animals are exposed to contagious diseases or killed by an order of the State Board of Health, and upon a post-mortem examination are found to have been entirely free from disease, the State Board of Health shall cause the same to be sold under their direction, first giving to the purchaser notice of the facts, and if said purchaser, or any other person, shall sell said slaughtered animals, or any part thereof, he shall in like manner give notice to the parties to whom such sales are made, and the proceeds of the sales, made by order of the State Board of Health, shall be applied in payment of the appraised value of said animals.

SEC. 20. Whoever violates any of the provisions of the preceding section shall be punished by fine not exceeding one hundred dollars (\$100) and the cost of prosecution.

SEC. 21. The State Board of Health shall keep a full record of their doings and report the same to the legislature unless sooner required by the governor.

SEC. 22. The State Board of Health may, by order, require any two (2) or more Local Boards to act together for the purposes of this act.

SEC. 23. The sum of three thousand dollars, (\$3,000.) or so much thereof as necessary is hereby annually appropriated for the payment of expenses incurred by the State in enforcing this act; said expenses to be approved by the State Board of Health and by the governor.

SEC. 24. This act shall take effect and be in force from and after its passage.

Approved March 7, 1855.

## AN ACT TO REGULATE OFFENSIVE TRADES AND EMPLOYMENTS—CHAP. 222, LAWS OF 1885.

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. The Board of Health of each town, village or city in this State, shall, from time to time, assign certain places within such town for the exercise of any trade or employment which is a nuisance or hurtful to the inhabitants, or dangerous to the public health, or the exercise of which is attended by noisome or injurious odors, or is otherwise injurious to the estates of such inhabitants; and may prohibit the exercise of such trade or employment in places not so assigned. Said Board may also forbid such exercise within the limits of the town or particular locality thereof. All such assignments shall be entered in the records of the town and may be revoked when said Board shall think proper.

SEC. 2. It shall not be lawful for any person or corporation to exercise within any town, village or city, any trade or employment mentioned in section one (1) of this act, without having first obtained from the Board of Health of such town, village or city, permission so to do, and the assignment provided in said section; and any person or corporation violating the provisions of this section shall forfeit and pay the sum of fifty dollars (\$50) for each and every day that any such trade or employment is exercised or carried on, to be recovered in any court having jurisdiction thereof, and sitting within the county where any such trade or employment is exercised or carried on; such action shall be commenced and prosecuted by such Board in its name and for its benefit.

SEC. 3. When any assignment mentioned in section one (1) hereof shall be revoked, said Board shall serve upon the occupant, corporation or person having charge of the premises where such trade or employment is exercised a written notice of such revocation. If the person or corporation upon whom such order is served, for twenty-four (24) hours after such service, refuses or neglects to obey the same, said Board shall take all necessary measures, by injunction, or otherwise, to prevent such exercise; and the person or corporation so refusing, or neglecting, shall forfeit and pay the sum of one hundred dollars (\$100) for each and every day that such trade or employment shall be exercised after the service of such notice, to be recovered in the manner and by the party and for the benefit as provided in section two (2) hereof.

SEC. 4. Any person or corporation aggrieved by any order of such Board, may appeal therefrom to the district court of the county in which such trade or employment is exercised. Such appeal shall be taken by the filing of such aggrieved person or corporation, within five (5) days after the service of such order, in the office of the clerk of said court, of a notice of such appeal, together with a bond in the sum of not less than five hundred (500) dollars, with two (2) or more sureties, to be approved by the judge of said court, conditioned for the prosecution of such appeal to judgment and for the payment of all costs and expenses that may be awarded against such appellant, and by the service of a copy of such notice and bond upon such Board. If such appeal be taken within twenty (20) days next before the time appointed for holding a general term of said court within said county, the same shall be heard at such time as other civil causes, and at the request of either party, shall be tried by jury. If such appeal is taken more than twenty (20) days before any such term, the judge shall, by order, appoint a time and place for the hearing of such appeal, and shall, if the appellant demand a trial by jury, direct the sheriff of such county, to summon a jury of twelve (12) persons having the qualifications of jurors, to appear at the time and place named in said order, to serve as jurors in said cause. Any person so summoned may be challenged as in civil actions. If a sufficient number of such persons so summoned do not appear, the court shall require talesmen to be called as in other cases, and said appeal shall be tried as other civil causes. During the pendency of such appeal, such trade or employment shall not be exercised contrary to the order of said Board; and upon the violation of any such order the appeal shall forthwith be dismissed. Upon the return of the verdict of the jury the court may either alter or amend the order of the Board or affirm or amend it in full, to conform to such verdict. If the matter be tried by the court it shall have and exercise the same power.

SEC. 5. Any person injured, either in his comfort or the enjoyment of his estate, by the exercise of any such trade or employment may have and maintain an action for the damages sustained thereby.

SEC. 6. When it appears on a trial before the district court for the proper county, upon a complaint made by any person that any place or building assigned as provided in section one (1) of this act has become a nuisance by reason of offensive smells or exhalations proceeding from the same, or is otherwise hurtful or dangerous to the neighborhood, or to travelers, said court may revoke such assignment and prohibit the further use of such place or building for the exercise of either of the aforesaid trades or employments, and may cause such nuisance to be removed or prevented.

SEC. 7. When any building or premises within any city, village or town are occupied or used for the exercise of any trade or employment aforesaid, the State Board of Health shall, upon application made to it for that purpose, appoint a time and place for hearing the parties, and give notice of not less than ten (10) days thereof to the complainant and the party against whom such application is made, and after such hearing may, if in its judgment the public health or the public comfort and convenience so require, order any person to desist and cease



from further carrying on such trade or occupation in such building or premises; and any person or corporation thereafter continuing to occupy such building or premises, shall forfeit and pay the sum of one hundred (100) dollars for every day of such occupancy or use, to be recovered in any court having jurisdiction thereof by action commenced and prosecuted in the name of the Board of Health of such city, village or town, and for its use and benefit. Any person or corporation aggrieved by any such order, may appeal therefrom, and said appeal shall be taken, prosecuted and determined in the same manner provided in section four (4) of this act. During the pendency of such appeal, such trade or employment shall not be exercised contrary to the orders of said State Board, and upon the violation of [any] such order, the appeal shall forthwith be dismissed.

SEC. 8. The district court, or the judge thereof, may issue an injunction or other proper writ, to enforce the orders of said State Board, issued under the provisions of this act.

SEC. 9. Nothing in this act contained shall be construed as to impair any other remedies which may exist in cases of nuisance.

SEC. 10. This act shall take effect and be in force from and after its passage

Approved March 7, 1855.

## AN ACT TO PREVENT THE POLLUTION OF RIVERS AND SOURCES OF WATER SUPPLY.—CHAPTER 225, LAWS OF 1855.

*Be it enacted by the Legislature of the State of Minnesota.*

SECTION 1. No sewage, drainage or refuse or polluting matter of such kind as either by itself or in connection with other matter will corrupt or impair the quality of the water of any spring, well, pond, lake, stream or river for domestic use, or render it injurious to health, and no human or animal excrement shall be placed in or discharged into, or placed or deposited upon the ice of any pond, lake, stream or river, used as a source of water supply by any town, village or city; nor shall any such sewage, drainage, refuse, or polluting matter or excrement be placed upon the banks of any such pond, lake, stream or river, within five miles above the point where such supply is taken, or into any feeders or the banks thereof, of any such pond, lake, stream or river: *Provided*, Nothing in this section contained shall apply to Lake Superior. (Struck out by Legislature of 1857.)

SEC. 2. The State Board of Health shall have the general supervision of all springs, wells, ponds, lakes, streams or rivers used by any town, village or city as a source of water supply, with reference to their purity, together with the waters feeding the same, and shall examine the same from time to time, and inquire what, if any, pollution exist, and their causes. In case of a violation of any of the provisions of section one (1) of this act, said Board may appoint a time and place for hearing parties to be affected, and shall give due notice thereof, as hereinafter provided, to such parties, and after such hearing, if in its judgment the public health requires it, may order any person or corporation, or municipal corporation to desist from the acts causing such pollution, and may direct any such person or corporation to remedy the pollution, or to cleanse or purify the polluting substance, in such a manner and to such a degree as shall be directed by said Board, before being cast or allowed to flow into the waters thereby polluted, or placed or deposited upon the ice or banks of any of the bodies of water in the first section of this act mentioned. Upon the application of the proper officers of any town, village or city, or of not less than legal voters of any such town, village or city, to said State Board, alleging the pollution of the water supply of any such town, village or city, by the violation of any of the provisions of this act, said State Board shall investigate the alleged pollution, and shall appoint a time and place, when and where it will hear and examine the matter, and shall give notice of such hearing and examination to the complainant, and also to the person or corporation, or municipal corporation alleged to have caused such pollution, and such notice shall be served not less than ten (10) days prior to the time so appointed, and shall be served in the same manner that now is, or hereafter may, be by law provided for the service of a summons in a civil action in the district court. Said Board, if in its judgment any of the provisions of this act have been violated, shall issue the order or orders already mentioned in this section.

SEC. 3. The district court, or the judge thereof, may, upon the complaint of said State Board, or of the proper authorities of any town, city or village whose sources of water supply shall be so polluted, issue an injunction to enforce the orders of said State Board.

SEC. 4. Such orders of the State Board shall be served upon the persons, corporations, or municipal corporations found to have violated any of the provisions of this act, and any party aggrieved thereby, shall have the right to appeal to the district court of the county in which is situate the town, village or city whose source of water supply is found to have been polluted, and such aggrieved party shall have the right to a trial by jury in the same manner as in a civil action in said court. During the pendency of the appeal, the pollution against which the order has issued, shall not be continued contrary to the order of the State Board, and upon the violation of the order the appeal shall forthwith be dismissed.

SEC. 5. Any person, corporation or municipal corporation desiring to appeal from any such order of the State Board, shall, within thirty (30) days after the service upon him or it of a copy of such order, file in the office of the clerk of the district court of the proper county, a notice of such appeal, together with a bond in the sum of not less than two thousand (2,000) dollars, with two (2) sureties, to be approved by the judge of said court, conditioned for the prosecution of such appeal to judgment, and for the payment of all the costs and disbursements that may be adjudged against him or it therein, and shall, within three (3) days after such filing, serve a copy of such notice and bond upon the Secretary of said Board; and said Secretary shall, within ten (10) days thereafter, deliver such copies so served upon him to the mayor or other chief executive officer of any such city, village or town, whose source of water supply has been found to have been so polluted.

SEC. 6. Water boards, water commissioners, water companies, and the proper officers of any city, village or town, making use as a source of water supply, of any well, spring, pond, lake, stream, river, reservoir or well, within, or partly within, this State, and distributing the waters thereof for public, domestic and general uses, shall, from time to time, and whenever required by said State Board, make returns to said Board, upon blanks to be furnished by it, of such matters as may be required by said Board and called for by such blanks, and any such water board, water commissioners, water company, or officers of any city, village or town, who shall, for the space of thirty (30) days after being furnished with such blanks, fail or neglect to make any such report so required, shall, for each and every such neglect or failure, forfeit and pay the sum of one hundred (100) dollars, for the use of the Local Board of Health, or the proper officers acting as such, of the city, town or village where such delinquent has its principal office. Said State Board shall, in the name of the State, prosecute in the district court of the proper county an action for the recovery of the penalty or forfeit herein imposed.

SEC. 7. This act shall take effect and be in force from and after its passage.

Approved March 7, 1855.

## An Act to Provide for the Collection of Vital Statistics.

*Be it enacted by the Legislature of the State of Minnesota.*

SECTION 1.—The Clerk of each town, and the Health Officer of each village, borough or city in this State, shall obtain and register the following facts concerning the births and deaths occurring therein, separately numbering and recording the same in the order in which he obtains them, designated in separate columns, viz: In the registry of births, the date of birth, the name of the child (if it have any), the sex and color of the child, the names and places of birth of the parents, and the date of the record; in the registry of deaths, the date of death, [the name of the deceased,] the sex and color, the condition, whether single, widowed or married, [the age, place of birth,] the names and places of birth of the parents, the disease or cause of death, and the date of the record. The County Auditor of each County shall furnish each clerk or Health Officer within his County, at the expense of the County, a book in which to register the facts concerning the births and deaths as above provided. Provided, however, that in cities of over 100,000 inhabitants, where the duties hereby imposed upon the Health Officer, have heretofore been imposed upon the City Clerk, the latter shall continue to perform the same and receive the compensation therefor.

SEC. 2.—Parents shall give notice to such Clerk or Health Officer, of the births and deaths of their children; every householder shall give like notice of every birth and death happening in his house; the oldest person, next of kin, shall give such notice of the death of his kindred; the keeper, or other proper officer, of every workhouse, poorhouse, reform-school, jail, prison, hospital, asylum, or other public or charitable institution, shall give like notice of any birth or death happening among the persons under his charge. Whoever neglects or refuses to give such notice for the period of ten (10) days after the occurrence of a birth or death, shall forfeit a sum not exceeding twenty (20) dollars, to be collected as other fines are collected by law.

SEC. 3.—Any physician having attended a person during his last illness, shall, within ten (10) days after the decease of such person, furnish for registration to such Clerk, or Health Officer, a certificate of the duration of the last illness, the name of the deceased, his age, the disease of which the person died, and the date of his decease. And any physician or midwife having attended a case of confinement, shall, within ten (10) days thereafter, furnish for registration to said Clerk or Health Officer, a certificate of the date of birth, sex and color of the child, with the names, dates and places of birth of the parents. If any physician or midwife neglects to make such certificate, he shall forfeit the sum of twenty-five (25) dollars, to be collected as other fines are collected by law.

SEC. 4.—Such Clerk, or Health Officer, shall, on or before the fifth (5) day of each month, transmit to the Secretary of the State Board of Health and Vital Statistics, upon blanks to be furnished by said Board, a certified copy of the registry of births and deaths which have occurred within such town, village, borough or city, during the calendar month immediately preceding. For obtaining, registering and returning the facts herein required, such Clerk or Health Officer shall be entitled to receive from the County Treasury of his County, twenty-five (25) cents for each birth or death so obtained, registered and reported. And for neglect to perform such duties as herein required, he shall forfeit a sum not exceeding fifty dollars for each offense, to be collected as other fines are collected.

SEC. 5.—It shall be the duty of the State Board of Health and Vital Statistics, to prepare and furnish to such Clerks and Health Officers, suitable blanks and instructions for the making of the returns herein provided for. And the Secretary of said State Board of Health and Vital Statistics, shall, annually, on or before the fifteenth (15) day of January, of each year, transmit to the Clerk of the District Court, of each County, all of the said returns received by said Secretary from such Clerks or Health Officers, in such County during the year ending on the last day of the preceding December, together with his certificate showing the aggregate number of births and deaths so reported in such year by each such Clerk and Health Officer.

SEC. 6. The said Clerk of the District Court shall thereupon file the said returns so to him transmitted, in his office, and shall also issue to each such Town Clerk and Health Officer a certificate showing the amount due to them respectively, for the obtaining, registering and reporting the births and deaths aforesaid, as the same may appear from the said certificate of said Secretary of the State Board of Health and vital statistics. For all his said services, such Clerk of the District Court shall be entitled to receive from the County Treasurer of his respective county for recording such births and deaths, and making such abstract thereof as he may by law be required to make the sum of ten (10) cents for each such birth or death. And for his failure to perform any of the duties herein provided for such Clerk of the District Court, shall forfeit the sum of fifty (50) dollars, to be collected as other fines are collected.

SEC. 7.—The County Auditor of each County, upon the presentation to him of the aforesaid certificate of the Clerk of the District Court of his County, shall issue and deliver to each Clerk and Health Officer, respectively, his warrant upon the County Treasurer for the amount in said certificate stated to be due to such Clerk or Health Officer, and the County Treasurer upon the presentation of such warrant, shall pay the same to the person entitled thereto out of the general funds of the County Treasury.

SEC. 8.—To cover all Clerk hire, stationery and incidental expenses of the State Board of Health and Vital Statistics, under this act, the sum of one thousand (1,000) dollars shall be and hereby is annually appropriated.

SEC. 9.—Sections 81, 82, 83, 84 and 85 of Chapter six (6) of General Statutes of 1878, and all other acts and parts of acts inconsistent with this act, are hereby repealed.

SEC. 10.—This act shall take effect and be in force from and after its passage.

Approved March 8th, 1887.



# PUBLIC HEALTH IN MINNESOTA.

—THE—

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH.

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD. RED WING, MINN.

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VOL. III. NO. 7.

SEPTEMBER, 1887.

WHOLE NO. 31

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**C**HOLERA has reached the Quarantine Station in New York harbor, from Italy. The prompt and common-sense measures of the sanitary authorities of the State of New York, have isolated all the victims, and there seems no danger that the disease will reach the city or any other place in this country. Eight cases from the ship; twenty-six at quarantine. None since October 7.

**F**IFTEENTH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, AT MEMPHIS, TENN., NOV. 8-9-10-11, 1887. — As its name implies, the association is more than national, including in its membership delegates from Canada, as well as the United States.

It is the oldest association of its class in America, and more nearly represents all classes of persons interested in sanitary matters than any other.

Its meetings are the gathering places of Health Officers and Physicians, and other intelligent men and women, who are looking and working for the prevention of premature death; the prevention or control of disease; and the elevation of the standards of health, capacity and happiness, for all people.

We write after a long experience, as one of the oldest members of the association, when we urge Health Officers, and other representatives of local Boards of Health, to join the association and attend this meeting, so as to learn what a good and pleasant thing it is.

Memphis is famous for her hospitality, and has a particularly warm place for the followers of Hygiene, to which she attributes much of her present prosperity and future prospects.—[H.]

**T**HE INTERNATIONAL MEDICAL CONGRESS met, this month, in Washington; deliberated, was entertained, and adjourned. The Section on Hygiene, we are sorry to be compelled to report, was a disappointment. Neither the papers read, nor the discussions, gave any adequate demonstration of the work of representative men at home or abroad. A notable exception was the paper by Dr. Freire, which was of great interest, made all the more so by the modest and winning bearing of the author while reading it, or attempting to answer the flood of questions poured upon him concerning the general subject to which his discoveries and investigations belonged. Why so little help was given by American sanitarians, it is not our present object to inquire. It was not given, and that many prominent sanitarians who attended the congress refused to attend the Section on Hygiene, is also true. Other representative health officers did not attend the congress at all.

**P**OISONING BY LEAD.—Mr. Winter Blyth, having the opportunity, recently, of examining the bodies of two men who died, it was believed, from lead poisoning, obtained the following results: In one case he got  $\frac{1}{3}$  of a

grain of lead sulphate from the liver, and one-thirteenth of a grain from one kidney, and found a qualitative test in the brain. In the other case, examining the brain more carefully, he estimated the amount of lead sulphate in the cerebrum, at  $1\frac{1}{2}$  grains, and in the cerebellum, at  $\frac{1}{4}$  of a grain. His commentary, before the Chemical Society, of London, was as follows: "There has hitherto been no reasonable hypothesis to explain the profound nervous effects of minute quantities of lead, but if it is allowed that it forms definite compounds with essential portions of the nervous system, it may then be assumed that in effect it withdraws such portions from the body; in other words, the symptoms are produced, not by poisoning in the ordinary sense of the term, but rather by destruction—a destruction it may be, of important nerve centres."

**EFFECT OF WATER ON LEAD PIPES.**—The *Sanitary Record* publishes the following, from the German, by Dr. Pullman:

"1. Lead pipes have different effects on the different kinds of water passing through them.

3. The pressure of the water within the pipes has no influence on the chemical properties of the metal.

4. Very hard waters will not materially injure the pipes.

5. The presence of free carbonic acid in the water, or even a very small proportion of salts of lime or magnesia, will injure the metal. Hard water containing carbonate and sulphate of lime, will not dissolve lead; a thin coating of those salts forming in the pipes, will protect the metal from further disintegration.

6. Whenever drinking water has to be distributed and supplied by means of pipes (lead), the water ought to be carefully tested as to its chemical effects on lead, and the result of the examination ought to be published.

7. After a prolonged use of about six months, leaden pipes cease to be further influenced by the water, even when soft, or charged with carbonic acid.

8. Water will not be poisoned by leaden pipes merely from passage through them, provided that the flow be uninterrupted.

9. As the prolonged action of even minute doses of lead causes lead-poisoning, it is not allowable to fix the maximum per cent. of lead which may be permitted in drinking water; on the contrary, any kind of water containing the slightest trace of lead, the presence of which can be discovered by means of hydrosulphuric acid, must be strictly forbidden for drinking purposes."

For simple methods of testing for lead, see PUBLIC HEALTH, Vol. I., pp. 78-84. —[H.]

**EUCALYPTOL IN PHTHISIS.**—"Bouveret has employed it hypodermically in daily doses of from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  grams, for fourteen to sixteen days, in sixteen cases of Phthisis. That it was absorbed was proven by the odor in the breath, but not in the urine. No albumenuria resulted from its use. No effect was discovered upon the bacilli, but sweating was diminished. Six had fever, ten had none. Local disturbance at the seat of the injection was rare. The chief effect was upon bronchial secretion, and it was favorable."

"Perret and Chabbannes used a five per cent. solution, mixed with tuberculous matter, under the skin of guinea pigs, and found that it did not prevent the occurrence of artificial tuberculosis."—*Lancet*. I have used the fluid extract of Eucalyptus in Phthisis with a decided reduction of expectoration, and I believe, also, of fever, in as many as ten cases in the last two years. Three have been under observation for that period, taking the drug as the symptoms required, and in two of them the apparent benefit has been very marked. It has been palliative, not remedial. It has relieved a very distressing condition, and, I think, has prolonged life. The best way to give it is in ten or fifteen drop doses, on a lump of sugar, or in a spoonful of granulated sugar, in either of which forms it is to be swallowed as a mass. Any benefit is evidently anti-septic in character, a method of operation which is of growing importance in medicine, and worthy of more attention by practitioners.—[H.]

**DISEASES OF THE LUNGS IN IRELAND.**—The Registrar General of Ireland has recently furnished a very interesting paper on this subject, from which we abstract the following. "Total deaths for last ten years, 966,745, of which consumption of the lungs caused 103,528,—more than one-tenth. Other diseases of the lungs are charged with 142,991 deaths, one-sixth of total deaths, so that this class of diseases cause more than one-quarter of all the deaths in Ireland." This prominence has secured for it more than usual attention, and these are some of the conclusions of the Registrar:

"The less civilized of the population are less affected by consumption than the more civilized; that not only was this true, but populations, essentially rural, but near large towns, suffer more than those in remote districts, seeming to indicate that infection might serve as a means of spreading the disease. Low levels of country suffer more than high levels. The bogs do not seem to favor the disease; on the contrary, they seem to oppose it. No constant relation has been found between consumption and other diseases of the lungs." This reported effect of civilization finds support in a paper on "*The relative recuperative powers of man, living in a rude, and man living in a highly civilized state,*" by Dr. Geo. Harley, of London. He cited evidence to show that while man's physique as well as his mental powers, had increased during his evolution from a barbaric state, into one of *bienseance*, (well-being), his stature and his strength, as well as his length of days, having been increased *pari passu* (in regular steps), with this improvement gradually, he has deteriorated in his bodily powers, either to resist the lethal effects of injuries, or to recover from them as rapidly, and as well, as his less favored barbaric ancestors. He claims, further, that all the appliances of civilized life which administer most potently to human comforts and human enjoyments, have a deterring, enervating effect on the animal frame, as was demonstrated, he said, both by striking examples drawn from gipsy and tramp life, and also from domesticated animals; the sheep, ox, horse and the dog, in all of which species high breeding was shown to conduce to a marked diminution in the bodily recuperative capacity. He maintained that man universally had naturally a high standard of bodily recuperative power inherent in his constitution, and that the present superiority in this respect, of the South African Kaffir, North American Indian, the gipsy or the tramp, is due to the fact that the refining influences of a higher civilization diminish this animal recuperative capacity."

#### INFECTIOUS DISEASES OF MEN.

**REPORTED TYPHOID FEVER IN BRAINERD.**—We are glad to publish the following, which explains itself. If newspapers would ask Local Boards or this office, as to truth of such rumors before publication, they would be doing simple justice to all concerned, and be more nearly correct than at present. The *St. Paul Dispatch* of September 12, 1887, contained a statement that typhoid fever was epidemic in Brainerd, whereupon the Secretary inquired of the Health Officer for the facts. To which he replied Sept. 14, 1887, as follows: "The report you refer to is wholly unfounded. I have not heard of more than two or three genuine cases of typhoid fever in the city this fall. As for myself, I have not seen one. Some of the cases of malarial and other low fevers, have taken on a typhoid condition, but, on the whole, Brainerd has been freer from fevers of all kinds this summer, than for four years before."

**DIPHTHERIA IN LE SUEUR COUNTY, (KASOTA AND CLEVELAND TOWNSHIPS.) AND BLUE EARTH COUNTY, (JAMESTOWN TOWNSHIP.)**

We are under obligations to Dr. Collins, St Peter, for his reports of the outbreak at Cleveland and Kasota. Impelled by no other motive than that which all physicians owe—to *help in the control of such diseases*—as to attempt their cure, his reports are vivid reproductions of the dread facts of diphtheria, which will serve, we hope, to stimulate more activity in measures of prevention. We shall be glad if other physicians will imitate Dr. Collins' example, and give

us leaves from their daily experience in the management of this and other infectious diseases.—[H.]

ST. PETER, MINN., October 5th, 1887.

*Dear Doctor.*—During the month of September I had a number of cases of diphtheria under treatment. Four of the cases occurred in the village of Cleveland, and one in the eastern part of the township of Kasota. The Cleveland cases were in the family of Mr. Joseph L—, and consisted of a granddaughter, Lizzie VanA—, aged 16 years. She was taken sick on or about September 5th. I was called in September 9th. I found her with enormously enlarged cervical and submax glands, the throat and nose completely filled with exudation, pulse 120, temperature 105. September 18th, the daughter, Mrs. C—, was suffering; glands involved, exudation abundant, no nasal complication. September 18th, Mrs. L— came down—just a moderate attack, exudation confined to right side of throat. September 23rd, the son-in-law, Mr. Cook was taken down; glandular enlargement very marked, exudation abundant. Mrs. C— is 20 years of age, Mrs. L—, 58, and Mr. C—, 28. The last three cases were clearly the result of contagion. No known reason for the first case. The water is good; house, good as to sun, fresh air, cleanliness, etc. The first case lingered along until September 28th, when death occurred. After the throat symptoms subsided on the 18th, paralysis was present. I fed her by stomach tube and rectal injections. Used Reed & Carnick's peptonized beef, milk, egg-nog, stimulants, etc., freely. The stomach was unable to tolerate any nourishment after the 24th. From this time rectal injections had to be relied upon. On the morning of the 28th "coffee ground" vomiting occurred and the rectum would not tolerate anything, and death took place at four o'clock p. m. The other cases are making fair recoveries. Mrs. C— has some paralysis of the throat. The other case occurred in the family of Mr. Alvah P—, Kasota, a daughter, aged six years. The exudation was confined to right side, just a moderate amount of glandular trouble. No known exposure. Child first appeared to feel unwell September 16th. I was called September 22d, recovery was rapid and complete. No other cases in this family, which consists of eight members. I understand that there has been a number of deaths from diphtheria around Lake Madison station, Blue Earth County.\* I have no personal knowledge of whether this is true or not. To-day I hear that there are some cases in the village of Kasota,† in a family by the name of K—. I should have reported these cases before this but have been hard pushed and when I was at home felt more like resting than anything else.

With kindest regards, I remain

Yours fraternally,

D. B. COLLINS.

\* Inquiry was immediately made from this office: no reply at date.

† See report of chairman in this issue.—[H.]

ST. PETER, MINN., October 5th, 1887.

*Dear Doctor.*—This afternoon I received a telephone message to visit the K— family at Kasota. I find three sick with diphtheria. Eliza, aged 17 years and six months, was taken sick last Saturday, October 1st. John, aged 12 years, and Clarence, aged five years, were taken down October 2nd. Treatment has not amounted to anything—kerosene oil to the outside of the throat and to be gargled. Eliza has the croupal form of the disease. Pulse 128, and irregular, breathing labored, loss of voice, etc. Prognosis decidedly unfavorable. The boys have just a moderate amount of exudation and it is high up, not much involvement of the glands. There are nine (9) children and two (2) adults in the family. I have quarantined the premises. Up to to-day there has been more or less running in and out of the neighbors. I heard of two other cases of "sore throat" in children who have been around this place. I will probably get more particulars at my visit to-morrow.

Yours truly,

D. B. COLLINS.

The Chairman of the Local Board of Health of Kasota township, LeSueur County, replies as follows to a request from Secretary, for a report concerning outbreak of diphtheria in his township:



KASOTA, MINN., October 8th, 1887.

C. N. HEWITT, M. D. Red Wing.

*Dear Sir:*—Your circulars and instructions relative to cases of diphtheria were received to-day. The first case broke out on Sunday, October 2nd. Two days later two children—members of the same family (C. M. K.'s)—were taken sick. On Monday Monday Dr. I. C. was called. We understand that he pronounced the case diphtheria—but he did not give any notice to the Board of Health. On Wednesday Dr. D. B. C., of St. Peter, was called in. Immediately after notification by him we quarantined the infected building, posted notices warning the public in regard to the matter, employed a person to do all necessary errands for the family, and instructed the family to comply strictly with the instructions of the physician in charge in regard to fumigation and other sanitary measures. Death of the first patient occurred on the 6th inst. The others are recovering. Yesterday (7th inst.) another case broke out at the house of Th. L. Dr. A. W. D., of St. Peter, was called. Have quarantined them and given them instructions. Our greatest anxiety arises from the fact that two days elapsed between the first indications of sickness and the calling of competent medical help, during which time there was no restriction on the intercourse between the infected and other families. We are watching the matter very closely and endeavoring to do all possible toward restricting the disease and confining it to its present limits. We also propose to prosecute C., the doctor who was first called and who neglected to notify us in regard to the matter.

Very respectfully, etc.,

E. E. SULLS,

Chairman Board of Supervisors.

## SCARLATINA IN SLAYTON, (V.) MURRAY COUNTY.

SEPTEMBER 28, 1887.

"Scarlatina first appeared in Slayton May 25th, 1887. Its source is not known. Several children became exposed before the proper measures of isolation were adopted. The public schools were closed. Quarantining and isolation were carried out as far as possible. No compulsory action on the part of the village Board of Health was taken, only suggestions of the Health Officer, who treated all the cases, were found necessary. Where possible, as fast as the disease was noticed, patients were removed to a separate room in the house, from the rest of the family; a sheet kept saturated with a solution of carbolic acid was kept hung across the open door leading to the other apartments of the house, and the same disinfectant was used freely about the room. In several cases the rest of the family have been exempted in this manner. During the months of June and July, twenty-eight cases occurred with no deaths. The epidemic was milder than common. The sanitary condition of the village has been good.

THOS. LOWE, M. D.,

Health Officer.

P. S.—After a lapse of two months, three new cases have recently appeared, but are now nearly well. Think we shall be able to prevent its further spread this time."

## DIPHTHERIA IN INDEPENDENCE TOWNSHIP, HENNEPIN COUNTY.

Under date Aug. 19, R. M. Mills, township clerk, reported one case, Pearl H., eight years old. Isolated and guard stationed. Dr. F——, of Rockford, attending.

Aug. 23, Secretary replied, acknowledging receipt, and sending file of circulars on diphtheria, and copies of law for distribution. He also sent blanks (for reports of infectious diseases by physicians, to local Boards of Health,) to the town clerk and attending physician.

Aug. 25, T. C. enclosed certificate from attending physician that case was convalescent, and reported "Case has been isolated, with guard stationed during day. Necessary precautions taken, and physician's orders complied with."

Aug 27, Secretary acknowledged receipt.

Aug. 26, T. C. enclosed report of attending physician, Dr. F., of Maple

Plaine, of new case of diphtheria, in family of Mr. McC., a store-keeper, who lives over his store. The family was isolated. Sept. 2, Secretary replied, "From your report, I think it probable that these two outbreaks have connection with each other. *Isolation*, in each and every outbreak, must be as complete as possible, as the most important means for prevention of spread. Especially in the outbreak over a store, where the public go and come, your Board will see that this *isolation* is strictly enforced, to prevent what might occur, a wide-spread prevalence of the disease in your township. Close the store if you cannot be reasonably sure of safety. Keep me informed."

Aug. 29, T. C. reported: "One new case. Mabel H. Dr. F., Rockford, attending. Age, two years. First case from Minneapolis. None but family exposed. Isolated."

Sept. 5, T. C. enclosed certificate of Dr. F., of Maple Plaine, that case under his treatment was convalescent, as follows:

MAPLE PLAINE, MINN., Sept. 1, 1887.

TO THE HONORABLE TOWN BOARD.

*Gentlemen:*—I have advised Mr. McC. that after properly disinfecting clothing, etc., it is safe for himself and family, —excepting a child that has been sick—to go out freely after this date. But that in order to be perfectly safe, the child Maud, had better be kept in for three days longer, and that in order to keep people from the rooms, the flags be kept up three more days. I have given him instructions as to disinfecting and fumigation of the premises, which I think will be carefully looked after. Respectfully,

J. F. FARGO, M. D.

He also encloses certificate of Dr. F., of Rockford, that two cases under his treatment are also convalescent, as follows:

TO THE HEALTH BOARD OF THE TOWN OF INDEPENDENCE.

*Gentlemen:*—I have the pleasure to report that the cases of diphtheria in Mr. H.'s family are convalescent, and so far recovered as need no longer my attendance. I have dismissed them from my care to-day. The quarantine and sanitary regulations through your aid have been most effective to stay the spread of the disease. The family have observed excellently well all instructions given them; and I have no new cases to report. I have given instructions to the family, and ordered them to fumigate properly, and cleanse the house and all appertaining thereto, which I leave to the Board to see that it is done, before raising the quarantine and removing the flags. Yours respectfully,

O. R. FASSETT, M. D.

Sept. 7, Secretary replied: "Before discharging cases, see that everything is thoroughly cleansed and disinfected, especially all clothing, bedding, etc., which have been proven to be the most dangerous of all carriers of infection."

### INFECTIOUS DISEASES OF ANIMALS.

**P**REVENTABLE DISEASES OF CATTLE.—One of the first discoveries which we made, after the sanitary care of cattle was made the duty of the State and Local Boards of Health, was the fact that a considerable mortality was common at all seasons, but chiefly in spring and fall, and so far as we could learn, looked upon as a matter of course, by owners of stock. We have found it as difficult to get reports of the mortality of stock, (*from other than [supposed] infectious diseases*), as to get the same facts concerning men. Every spring and fall come reports of deaths from a variety of causes, chief of which are usually "black-leg," "pleuro-pneumonia," "mysterious disease," and the majority of them, so far as we have been able to learn, have not proved very fatal, or at any time contagious. The correspondence relating to supposed black-leg in Clinton Falls township, (under heading, "Infectious Diseases of Animals,") is a fair example of these outbreaks, and of the accounts sent to this office, with the exception that it is not usual to receive so good a report as this from the Chairman, or to obtain report of a post-mortem of one of the

affected animals. It will be seen that the outbreak was past before reported, and that no new cases have occurred for more than two weeks. It is worth notice, too, that the dead were under two years, which seems the rule. It is evident, further, that there is a good deal of uncertainty, even among professed veterinary surgeons, as to the real character of many of these outbreaks, and that the name "black-leg" is made to account for sickness with which, the subsequent history shows, it had nothing to do; and as for pleuro-pneumonia, it has never occurred in our State.

Another important point, (which it shall be no fault of ours if cattle owners do not understand), is this: *Infectious diseases of cattle are not the only preventable diseases, nor by any means the only ones worth studying to that end.* In illustration see the history of what appears to be a mild epidemic of catarrh, non-infectious, but steadily fatal. We review what is known of this affection, to date, in Minnesota, in the next number. No better illustration of what we are trying to do, and of the difficulties in the way, has yet been encountered. We have begun a careful study of the whole subject, and invoke the co-operation of all interested in the matter. The first thing to do is to secure prompt notification of any outbreaks which may occur hereafter, and with as full details of location, dates, names of owners, symptoms of sickness, and, in case of death, results of post-mortem examination, as possible. All will understand that such investigation and report will be best made by a competent veterinary surgeon. When one is not available, do the best you can yourself. Most owners are familiar with the look of healthy animals, living or dead, and can therefore recognize marked departure from health, either in the behavior of the animal when alive, or in the appearance of the organs after death, and their report of what they find, with the specimens of disease discovered on post-mortem, will usually enable us, with the help at our disposal, to advise as to the best method of proceeding thereafter.

*Always notify the local Board of Health first, even when you write to this office.* The legal responsibility is divided between them and this Board, so that mutual co-operation is necessary for the best results.

*The first step to take, when one or more of a herd are sick of a suspicious, or unknown disease, is to separate the sick from the well, and the entire herd from association with other cattle.* Next, keep other cattle from the stables, pastures, or other places which have been occupied by the suspected, till suspicion is removed, or the true character of the disease is developed. These measures insure the safety of the herd and adjacent animals, till the real facts of the case are known, and give time for cautious investigation, avoiding hasty conclusions and needless alarm.—[H.]

PROF. JAMES LAW, V. S., SECOND REPORT ON MALIGNANT CATARRH OF CATTLE IN STEELE COUNTY.

Other deaths having occurred in the Ahrens and adjacent herds, I requested Prof. Law to make another visit. He very promptly and kindly did so. The following is his report.—[H.]

OWATONNA, MINN., Oct. 8, 1887.

DR. CHARLES N. HEWITT, Secretary State Board of Health.

*Sir:*—I have to-day visited the farm of Frederick Ahrens, in Havana township, and learn that since our visit, July 18th, he has lost three cows, two calves, and two steers, the last on Sept. 6th. From Mrs. Ahrens I learned that he had continued to use the swamp pasture, formerly suspected, but that two of his neighbors also did so, and have lost none. This would seem to imply that, unless the Ahrens' herd had been rendered morbidly susceptible, by reason of the previous winter's management, the source of the disease is to be sought rather in his home farm, (swamps or stagnant ponds).

The allegation that his cattle had infected others, is completely negatived by the facts:

*First,*—Of the escape of the cattle of neighbors, that mingled freely with them; and,

*Second,*—That the cattle of W. C. Leib, which died recently, had never

been nearer to the Ahrens' herd than one and a half mile, and that all the intervening herds had entirely escaped; also by the fact of the entire absence of watershed from the Ahrens' to the Leib herd.

W. C. Leib, who lives at Pratt Station, bought one cow of Ernest F. Degner, of Somerset, two miles west of Pratt, and four miles from Ahrens', early in the spring. In September this cow sickened, ran from the nose and eyes, and died in about six days. Later, one of his two other cattle sickened, became blind, and died the first week in October. Leib opened the first cow, and found the lungs sound, but the head, when cut open, less than twelve hours after death, was very offensive. One of these passed bloody urine. Mr. Leib's remaining cow is in fine health, though kept in the same pasture, with a marsh and pond in the centre nearly dried out.

Mr. Degner, of whom Mr. Leib bought his cow, had, on May 4th, turned twelve yearlings and eight two-year-olds out a pasture of Mr. Holmes, at Geneva Lake, eight miles south of Somerset, where all twelve of the yearlings died, the first on June 11th. All the older cattle escaped. Hermann Wrede turned thirty head on the same pasture, and the only two yearlings in the lot died. Two other neighbors of Mr. Degner turned in three each, but all escaped.

Mr. Degner saw only one of his cattle while sick. That one went blind, and was brought home, was discharging freely from the nose, and was finally killed and buried.

Mr. Leib's fear that the disease had been contracted from Degner's, is put out of court by these facts, as his did not sicken simultaneously with Degner's, but three months later, and five months after all contact with the Degner herd. The cow Leib bought was removed from the Degner herd, two months before any appearance of sickness, and at least one month before the Degner cattle had been turned into the Holmes pasture, where they and others manifestly contracted the disease.

The developments since July tend to confirm the theory that the morbid principle is contracted from the soil, and that each animal is afflicted directly from that source, and independently. The only instance apparently opposing this is the death of Leib's second cow, from assumed contagion. But even his first case was brought five months before, so that it must have contracted the disease after the purchase, and thus the second case arose independently, as the first did. Besides, this second victim passed bloody urine, and was probably enough, a case of *hæmaturia*, which also prevails on some poorly-drained lands.

Though no case of the disease has occurred for some time, yet the descriptions agree in the main with the theory of malignant catarrh of cattle.

Respectfully,

JAMES LAW.

#### SUPPOSED BLACK-LEG.

CLINTON FALLS, STEELE COUNTY, MINN., Sept. 5, 1887.

Dear Sir:—I have just learned that there is a case of Black-leg in the east side of this town. Will send you a report soon as I can.

Yours,

A. C. FINCH.

CLINTON FALLS, MINN., October 10, 1887.

CHAS. N. HEWITT,

Sir:—Yours of October 4th received and noted. Immediately on receipt of the same I investigated the matter, and found that about the first of September Mrs. B. Dinin lost one coming two-year-old heifer. About two weeks thereafter she lost two more of the same age. The first symptoms of disease noticed was lameness in the forelegs and stiffness, at night, and in the morning they were dead. The rest of the herd were bled, and no more were lost. One of the creatures was opened and it was found that the heart was black and contained clotted blood; but no blood appeared to have settled under the skin. The pasture contained both high and low land. The water supply from a slough; condition of same very poor. The herd contained 18 head. Three sick, all of which died. First one died about September 1st. The last about September 14th. The herd had been kept on very short pasture and then



turned on to full feed. After that the three died. Please send to my address the volumes referred to upon Public Health. Yours respectfully,

FRANK W. ADAMS,  
Chairman of Board of Supervisors, Clinton Falls Minn.

### SANITARY INSPECTION REPORTS.

IN OUR JUNE-JULY ISSUE, by oversight in proof-reading, the following errors were made in Report of Sanitary Inspection of St. Charles (C.), Winona county, which should read as follows: On page forty, eighth line of St. Charles report, in place of words "nasty part of town," read "north side of town": same page, twelfth line, Mr. Hill is "Clerk of School Board," instead of "Clerk of Court," as published.—[H.]

WINONA, (C.) FRANKLIN STAPLES, M. D., H. O.—*To the Board of Health of the City of Winona:*—The following report of May inspection is submitted to the Board:

A general inspection of the city was made by the Health Officer, assisted by the Sanitary Inspector, in accordance with the laws of the State, in the month of May, of the present year, and the following notes concerning the city's sanitary condition, and the sanitary improvements, were made. I am able to report that the general sanitary condition of the city is good. Under the efficient management of the Department of the Street Commission, the streets of the city have been, and are, kept in a good condition, and with as good surface drainage as the level surface of our city will allow. This is done by careful work in keeping the street gutters and culverts clean and free from obstruction. The summer season was unusually dry, until the last two weeks in the month of August, when abundant rains rendered the streets in the business portion of the city almost impassable, on account of the deep mud. Good pavements and perfect gutters are now demanded for this portion of the city, for business, comfort, and healthfulness of the city,

*Water Supply.*—The water supply for drinking and domestic use, is in part from the city water-works, but largely from driven wells in the gravel beneath the soil of the city. As yet, the water obtained from both sources is believed to be good. It is, however, true that an analysis of various samples of water taken from the great well of the city water-works, and from wells in various parts of the city, made in the month of December last, by Dr. Charles Smart, of the U. S. Army Service, while on duty here for our State Board of Health, affords grounds for some suspicion concerning what is liable to be the character of the water of our city at no distant day. The following is from Dr. Smart's report:—"Although containing little recent organic matter, the presence of free ammonia and nitrates, indicates that sources of contamination exist in the track of the water supply. The Winona general supply should be examined from time to time to determine whether its free ammonia is a permanent characteristic, derived from the area of drainage, or an accidental contamination, effecting that particular sample." This plainly shows the importance of the early establishment of a system of sewerage for the city, and the abandonment of the entire system of cess-pools and privy vaults in the soil of the city. The well of the city water-works has been frequently inspected. It is well protected, and the water is good. The capacity of the well has been severely taxed during the past very dry summer. It is recommended by the Board that in future enlargement of the public water supply, a new well should be dug, rather than that any direct connection be made with the river, at least for constant use,

*Sewerage.*—An effort was made during the autumn of the last year, by unanimous action of the Board of Health, to have the initiatory steps taken for the establishment of a system of sewerage for the city; but the action of the Board did not receive the favor of the City Council, and the city has been obliged to wait for the action of the present or a future city government. Early in the present season, the City Council authorized some scavenger work to be done at the expense of the city, the amount and location of the work to be at the discretion of the Board.

It is the duty of owners and occupants of property to keep their yards and alleys in a sanitary condition. The one Sanitary Inspector in the employment of the Board has been constantly on duty since the first day of April, and in co-operation with the Street Commission, has done much to improve the condition of alleys and premises.

In addition to the Inspector's work in streets and alleys, to the present date he has visited 196 residences and notified occupants to put their houses and yards in a sanitary condition, and has caused the work to be done. The slaughter-houses, soap factory and rendering establishment, have been regularly inspected, and have been kept in good condition. Under the direction of the Inspector, a large number of dead animals have been removed and buried.

*Slaughter Houses.*—The abattoir slaughter house, in the Fourth Ward of the city, owned and operated by Launprecht, Kaiser & Co., has been properly conducted and kept in a sanitary condition. During the present season an additional slaughter house has been authorized by city ordinance in the First Ward, with the same regulations as control the one first established. This is owned and operated by Mr. Charles Daering, and is reputed to be in good condition.

*School Buildings.*—During the summer vacation extensive changes and improvements have been made in the provisions for ventilating and heating the building of the State Normal School. In place of the seven furnaces which have been in use during the past seventeen years, fourteen large Ruttan furnaces have been put in, together with the Smead system of dry closets.

In order to provide for a more perfect system of ventilating new brick warm-air flues have been built to every room in the building, involving the use of about ninety-five thousand brick in their construction. The capacity of the flues is three or four times that of the old flues, and is sufficient to secure to each pupil in the building a supply of two thousand cubic feet of fresh air per hour, which is about as much as can be moved through the rooms without creating unpleasant drafts. In order to secure uniform ventilation at all seasons, there has been added a mechanical system of ventilation, which is operated by a Blackman ventilating fan, located in the main ventilating shaft. This will be propelled by a small engine, the boiler of which is located in a building outside of the main enclosure. The cost of these additions will be about \$8,000.

*Public High School.*—The Ruttan system of heating, ventilation and dry closets, has been placed in the old High School, or Central Building, and the same system has been adopted in the new High School building, now in process of erection.

The Board of Education made a thorough and careful examination of the matter, visiting several large buildings in other cities where the system is in actual use. Not only is the warming of the buildings more effectually accomplished by these large furnaces, and capacious and direct flues, but the ventilation of the school rooms and of the closets is so perfect as to leave nothing further to be desired. The removal of the inconvenient, unsightly, and noisome outside privies is in itself sufficient warrant for the change. The vaults are now within the basement, and the deposits are so desiccated by constant currents of warm air that they are entirely inodorous and innocuous, and are burned in the furnaces without any inconvenience whatever.

*County Jail and City Lockup, etc.*—The County Jail has been examined, and found to be in good condition—the ventilation properly cared for—the water-closets clean—the waste pipes in good order, and the drainage good. The City Lock-up at the Police Station is as well ventilated as the present construction of the building will afford. It is kept as neat as possible, and the water closet kept in good order.

*The Disposal of Manure, Garbage, etc.*—By city ordinance passed by the present City Council, and approved by the Mayor, May 20, 1887, the duties of the Mayor as Executive Officer of the city, and of the Board of Health, were clearly defined. The provisions of this act were such as to prevent obstruction in streets and alleys, and to prevent all nuisances which would render the same unsanitary. In accordance with the same, a convenient dumping-ground was established on land south of the Chicago, Milwaukee & St. Paul R. R., owned by Mr. Frank Johnson. On this land since about the middle of May, all manure and garbage, other than the contents of cess-pools and privy vaults, have been dumped, in trenches prepared for the same, and properly covered with earth. The contents of privy vaults removed have been taken to lands more remote, and below the city.

By action of the Board of Health on the 6th day of June, certain sink holes containing offensive standing water on the property of the Chicago, Milwaukee & St. Paul railway, were condemned as a nuisance, and ordered to be filled with earth to the proper grade, and that all obstruction to the natural surface drainage, caused by the grade of said railroad, be removed in such a manner as to be satisfactory to the City Engineer and Board of Health. This work has been partially completed by the railroad company, and so far as it is done, is satisfactory.

## VITAL STATISTICS.

STILL BIRTH MUST BE REPORTED AS DEATHS, AND NOT, AS SOME HAVE BEEN DOING, AS BIRTHS ALSO, THUS DUPLICATING ENTRIES, and causing confusion and delay in compiling and comparing the returns. Clerks and Health Officers will please look over their records and correct this mistake, notifying the Secretary of the number thus duplicated. They will please avoid this duplication hereafter, to enable him to prepare and sign the vouchers for payment of fees, at the end of the year. Sec. 5, Chap. 114, Law 1887.—[H.]

WE PRESENT the first tabular statement of the results obtained by the classification of 9870 births. This table does not include all that have occurred since the law went into effect, but only such as have been compiled in our office to July 1st. It does include nearly all "still-born" children reported to that date. The discovery was made too late for correction, but does not affect the value of the table, which is so arranged as to give at one view most of the facts of the monthly returns, from which it is made up. We have no space for comment this month.—[H.]

## STATISTICS OF 9870 BIRTHS IN MINNESOTA.

(BEING THE MAJOR PART OF ALL THAT OCCURRED JANUARY 1 - JULY 1, 1887).

		Male	Female	Un- known	To- tal	Per Cent	
SEX	MALES .....	5105	.....	.....	.....	51.7	
	FEMALES .....	4721	.....	.....	.....	47.9	
	UNKNOWN .....	.....	.....	44	9870	.4	
COLOR	WHITE .....	5094	4713	25	9832	99.6	
	COLORED .....	11	8	5	24	.25	
	UNKNOWN .....	.....	.....	14	14	.15	
Condition	LEGITIMATE .....	5077	4698	24	9799	99.3	
	ILLEGITIMATE .....	28	23	2	53	.53	
	UNKNOWN .....	.....	.....	18	18	.17	
No. at Birth	SINGLE .....	4976	4602	35	9613	97.4	
	TWINS .....	128	114	.....	242	2.45	
	TRIPLETS .....	1	5	.....	6	.06	
	UNKNOWN .....	.....	.....	9	9	.09	
PARENT NATIVITY	BOTH AMERICAN .....	1364	1258	11	2633	26.67	
	BOTH FOREIGN .....	2919	2635	5	5559	56.32	
	AMERICAN FATHER FOREIGN MOTHER.	228	245	2	475	4.81	
	FOREIGN FATHER AMERICAN MOTHER	491	462	5	958	9.7	
	NOT GIVEN .....	103	121	21	245	2.5	
	Minnesota	Father	344	303	.....	647	6.55
	Mother	613	547	3	1163	11.80	
	N.E.States.	Father	105	130	1	236	2.39
	Mother	72	85	3	160	1.62	
	Other U. S.	Father	1152	1066	12	2230	22.59
Mother	1192	1094	10	2296	23.25		
Brit. Amer.	Father	248	253	2	503	5.09	
Mother	210	242	1	453	4.59		
Gr't Brit'n.	Father	100	89	2	191	1.94	
Mother	69	64	.....	133	1.35		
PARENT NATIVITY - CONTINUED							
Norway....	Father.	744	684	2	1430	14.49	
	Mother	730	675	2	1407	14.25	
Sweden....	Father.	713	602	1	1316	13.33	
	Mother	710	602	.....	1312	13.28	
Germany..	Father.	996	911	3	1910	19.88	
	Mother	910	792	4	1706	17.28	
Ireland....	Father.	155	142	.....	297	3.	
	Mother	115	118	.....	233	2.36	
Other C'nt'ies	Father.	448	419	1	868	8.79	
	Mother	399	802	.....	801	8.12	
Unknown.	Father.	100	122	20	242	2.45	
	Mother	85	100	21	206	2.09	
AGE OF PARENTS	15-20 years.	Father.	.....	.....	.....	.....	
	Mother	22	21	.....	43	.....	
	20-30 years.	Father.	159	147	.....	306	.....
	Mother	280	251	1	542	.....	
	30-40 years.	Father.	257	227	2	486	.....
	Mother	205	201	1	407	.....	
	40-50 years.	Father.	119	129	.....	248	.....
	Mother	56	46	.....	102	.....	
	50-55 years.	Father.	21	17	.....	38	.....
	Mother	.....	1	.....	1	.....	
55-60 years.	Father.	5	8	.....	13	.....	
Mother	.....	.....	.....	.....	.....		
Over 60 yrs.	Father.	4	.....	.....	4	.....	
Mother	.....	.....	.....	.....	.....		
Unknown.	Father.	4540	4193	42	8775	.....	
	Mother	4542	4191	42	8775	.....	

## LABORATORY NOTES.

## WATER ANALYSES.

MAY.	SOLIDS		NITRITES	CHLOR'N	OXYG	AMMONIA	
	Total	Vol.				Free	Alb.
(1) Rochester public supply proposed well	24.8	1.6	0.00	0.29	.0598	.0085	.0015
(2) Albert Lea, private well	52.8	5.0	0.00	5.0	.368	.078	.023
(3) " " " " " "	38.8	8.8	Trace	0.80	.0442	.008	.0045
(4) Montrose " " " " " "	65.0	20.0	mrk'd trace	4.80	.1749	.004	.013
(5) Faribault, private well	34.0	4.0	slight trace	.15	.3223	.0314	.009
(6) Madelia, spring	37.0	5.0	.000	.20	.1289	.0403	.003
(7) As'lm for Ins. St. Peter, art'n well, new	84.0	6.0	.260	2.8	.000	.0666	.0018
(9) Featherstone Prairie, private well	..	..	Trace	2.1	.085	"	....
(10) " " " " " "	..	..	Trace	4.2	.505	not "	....
(11) Albert Lea, private well	50.0	4.4	.000	0.4	.0598	.001	.0052
(12) Le Sueur, public well	108.	32.0	.015	9.7	.0506	.0046	.007
(21) Austin, prop'd pub. sup'y, spring, No 1	30.0	4.0	.000	.05	.085	.0375	.003
(22) " " " " " " No. 2	23.0	4.0	.000	.20	.390	.0022	.002
(23) " " " " " " No. 3	22.0	4.0	.002	.20	.040	.0022	.0016
(24) " " " " " " No. 4	....	....	Trace	.20	.045	.0025	.0022
JULY							
(25) South Stillwater, stream No. 1	20.0	5.0	.000	.15	.175	.0023	.0074
(26) " " " " " " private well, No. 2	31.0	....	Trace	.45	.110	.0010	.0024
(27) " " " " " " " " No. 3	28.0	3.0	"	.45	.075	.0006	.0036
(28) " " " " " " " " No. 4	15.0	1.0	.000	.30	.050	.0015	.0028
(29) " " " " " " " " No. 5	....	....	.000	.70	.055	.0012	.0030
(30) " " " " " " " " No. 6	....	....	.000	.350	.075	.0002	.0054
(31) Smith's Mills, private well	252.	40.9	.036	1.5	.146	.0150	.0099
(32) St. Peter, private well	43.0	15.0	.020	1.8	.0292	.0006	.0022
(33) Willmar, private well	68.0	30.0	.000	2.3	.0634	.0040	.0045
(34) Mankato, public supply well	50.0	5.0	.022	.25	.0585	.1488	.0022
(35) " " " " " " " " Blue Earth River	38.8	6.0	.000	.15	.3412	.0068	.0131
(36) Elk River, private well, No. 1	91.0	33.0	.001	4.7	.1024	.00018	.0095
(37) " " " " " " " " No. 2	31.5	8.0	.000	0.6	.117	.0048	.0116
(38) Spring Valley, SpringVal. Creek, No. 1	25.0	7.2	....	0.6	.741	.2362	.040
(39) " " " " " " " " Ex. E	....	....	....	83.0	19.803	....	....
(40) " " " " " " " " Ex. F	94.0	....	.000	33.0	4.738	1.921	.850
(41) " " " " " " " " Ex. G	....	....	....	3.0	3.178	.666	....

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF SEPTEMBER.

## DISEASES OF MEN.

Diphtheria	{	cases,	32
		deaths,	9
Scarlatina	{	cases,	5
		deaths,	0

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for	35
Reported during the month	17
Killed	14
Released	1

Remaining September 1st isolated or not accounted for..... 37



# PUBLIC HEALTH IN MINNESOTA.

—THE—

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THIS number, treble its usual size, represents the months of October, November and December. The work of those months has been so heavy as to prevent the regular monthly issue. The task of organizing the system of monthly returns of births and deaths, has been very hard, but the worst is over and we shall, in a few weeks, have the pleasure of submitting the first fruits to our readers.

NORWEGIAN LEPROSY.—Dr. Gronvold's statement respecting the newly discovered cases, brings into very clear light the important fact, that "*No case of that disease has ever originated in Minnesota by contagion, and that of all the children of Lepers living here, not one has exhibited any sign of that disease.*" This board, through Dr. Gronvold as chairman of its committee on the subject, has, for fifteen years, kept careful record of all authentic cases. A few copies of Dr. Gronvold's last report are left, which will be sent to anyone interested in the subject, who will apply for them.

VITAL STATISTICS FOR 1887.—The returns are nearly all in and copied into trial books where they are carefully studied by the Secretary, and corrected by the exclusion of duplicates, the correspondence with attending Physicians for verification of causes of death, in case of doubt, and the classification into regular order for comparison and study. From the general tables, so prepared, for each township, village and city, other tables will be made for each of the diseases causing greatest mortality, which will exhibit all the evidence attainable as to the relations of each, to season, sex, social condition, age, nativity, parent nativity, and other facts which can be presented in tabular form. Further illustration, when possible, will be drawn from correspondence of Health Officers, attending Physicians, and other sources. The object constantly in view is to make the returns of deaths of as immediate and practical use as is possible, for a knowledge of the distribution of disease prevalence in the State, the relative mortality of different diseases, the age and sex most likely to be affected, and other information which we ought to get from this source. We are very glad to be able to report that the system of monthly reports has been a decided success, that more than two-thirds of the whole number of Health Officers and Town Clerks have complied with the law, and that a large proportion have taken especial pains to inform the people of the advantage and necessity of a hearty compliance with it. The result has been a rapidly growing promptness in making returns. (For information as to the details of this work see under "Vital Statistics.")

HEALTH OFFICERS will find in this number, abstracts of papers on the causation of typhoid fever, and ague, from foreign journals. We have found them interesting and suggestive, and submit them in the belief that others will find them so too. Prof. Councilman is deserving of thanks for his efforts to make Laveran's discovery of practical use. We take this opportunity to thank him for sending us microscopic slides of the blood of ague, exhibiting the parasite in two of its forms. Prof. Brouardel's paper discusses a subject of growing importance in Minnesota, the relation of water supply to a disease

which causes at least 2,000 cases of sickness and 300 deaths in our population every year. We are now preparing the report on Typhoid Fever for 1887, which will be a very convincing argument for more attention to the available means, at our disposal, for the prevention, or diminution, of the sickness and mortality of which it is the cause.

*Diphtheria.*—583 cases of this disease have been reported to the Secretary during the year ending December 21st, in 100 different districts and in forty-six counties. Of this number 144 died, 24.7 per cent. This does not represent all the cases or deaths, but those which have been reported by Health Officers or Clerks as they occurred during the year. Each of these outbreaks were watched by the local authorities, and every precaution known to them taken to prevent the spread of the disease, so that it has been more thoroughly restricted in its ravages than heretofore. The tables now in preparation, drawn from the Vital Statistics of 1887, will tell the story of the relations of age, sex, season, nationality, and many other incidental facts. These will be presented with the comments of Health Officers, attending Physicians, and other illustrations drawn from the correspondence and other information, collected by the Secretary of this Board.

*Scarlatina.*—306 cases, with twenty-four deaths, have been reported as they occurred during 1887. Tables made up from the Vital Statistics of the year, and presented as above described for diphtheria, are in preparation and will be printed in this journal as soon as possible.

**P**LEURO-PNEUMONIA of cattle has, we believe, been crushed out in Cook County, Ill., but Dr. Salmon's reply to our telegram, asking advice as to removing restrictions, decided this Board to wait a little longer. It cannot be for long, however. (See under Infectious Diseases of Animals.)

**A**S to Glanders, the returns for 1887, summarized under Infectious Diseases of Animals, show the gain made during the year in the control of that insidious disease. Importations from without the State have had less to do with its occurrence than the attempt at cure by the so-called Veterinary Surgeons, and the ignorance of innocent owners of the symptoms of the disease. By the free distribution of a circular on the subject, written in such a way as to impress the average owner with the easily recognized symptoms of the disease, and the necessity of skilled veterinary advice when in doubt, and the risk of buying horses of unknown or irresponsible parties, much has been done to diminish the number of centres of infection, and to check the trade in infected animals. In but nine of seventy-nine localities, in which this disease is reported this year, was it reported in 1886.

**A** CONFERENCE, for the devising of measures to keep Texas Fever out of the other States, was called by the Cattle Commission of Ohio to meet at Springfield, Ill., December 14, 1887. This Board was represented by the Secretary, at the suggestion of the Governor. We found considerable difference of opinion among the Veterinary Surgeons present, and the practical farmers, and little new, or positive, was agreed upon. The discussions took a much wider range than Texas Fever, but with no definite result as to mutual co-operation. The advantage to us was the privilege of meeting representative men and hearing them discuss ways and means of dealing with the infectious diseases of animals. From our experience at this, and similar meetings, it is apparent that in the matter of mutual confidence and co-operation, this branch of practical hygiene is not up to the standard already reached by that devoted to the diseases of men. We hope for a better understanding between these closely related departments of a common work, in the near future. What better evidence of this need can we instance than the cordial relations which have grown out of the masterly work done in Cook County, Illinois, in the crushing out of pleuro-pneumonia? Our Board has reason to know this, our representative having met with most cordial, helpful, and kindly consideration from all the gentlemen who conducted that work to its successful completion.

## AMERICAN PUBLIC HEALTH ASSOCIATION.

THE Memphis meeting was a thoroughly representative one. The proceedings are not yet at hand so that our present reference must be more general than specific. The members in attendance were mostly official delegates of State and Local Boards of Health, and as was to be expected, the interest centered largely in the discussions of the organization and working of the New York Quarantine, as demonstrated in dealing with the recent importation of cholera into that State. It was a very encouraging feature of these discussions, to observe how ready was the acceptance of very radical propositions, e. g., those of Dr. Holt, of Louisiana, on disinfection of ships and their lading of living and other things, if supported by the needed evidence. The Dominion of Canada has adopted his methods and their zealous and efficient quarantine officer, Dr. Montezambert, returned with Dr. Holt to New Orleans for a personal inspection of his work as in operation at the Mississippi Stations. The differences of opinion and methods between representative and successful State officers as between Dr. Rutherford, of Texas, and Dr. Holt, of Louisiana, were of great interest to the Health Officers of the Mississippi valley, and were explained with the mutual courtesy and consideration characteristic of scientific collaborators and gentlemen. Guarding, as those officers do, the most advanced outposts of defence against yellow fever, every year, and of cholera, whenever it threatens us from that direction, we know we express the feeling of many more Health Officers when we write that we rely with implicit confidence on their skill, energy, and ability, to perform the duties which rest upon them.

*The President's Address.*—The suggestion of the President of the Association, as to a National Health Service, is in the same direction as the experiment tried at the Washington meeting, when the attempt to secure a Bureau of Health in one of the departments, by a bill submitted to Congress, failed miserably, and helped to fix that duty, so far the control of the Epidemic Fund was concerned, in the hands of the Marine Hospital Service. The National Board of Health was organized, at the request of this association, and only needs proper re-organization to become the natural, and successful, national representative of public hygiene. With the increasing co-operation between State Boards of Health, and between them and the Canadian Boards, the control of epidemics and other practical sanitary work is, more than ever before, in the way of actual accomplishment. We can afford, therefore, to wait till Congress can be induced to enact just what is needed, and it is the wisest thing to do so.

*Sea Board Quarantine.*—The President summarized the conclusions of the Sanitary Conference of Rome, of which he was a member, as follows: "It consists of a sanitary supervision of ships at the port of departure, when this was an infected port, or in communication with an infected locality; in the sanitary supervision of ships and passengers while in transit by a properly qualified physician, upon all passenger ships; and in such detention at the port of arrival as might be necessary for the disinfection of the ship, the personal effects of the passengers, etc. If one or more cases of cholera should appear on board during the voyage they were to be isolated and rigid measures of disinfection carried out, and the action of the health authorities at the port of arrival was to depend largely upon how effectively this was done. In short, the treatment of the vessel, and its passengers, was not to be determined in advance, by arbitrary rules, but was to be governed by an intelligent consideration, by an expert, of all the circumstances relating to the sanitary history of the ship from the date of its departure from an infected port."

*"Local defence against Cholera.*—It is even simpler than in the cases of yellow fever. Ample evidence demonstrates that the epidemic extension of this disease depends largely, if not exclusively, upon the water supply. Where this is subject to contamination by the discharges of the sick, there cholera is liable to become epidemic. On the other hand, cities like Rome, in Italy, which have an ample supply of pure water, drawn from a source not likely to be contaminated, seem to be cholera proof, notwithstanding the filth and squalor in which a considerable portion of the population lives." The address concluded



with a review of some of recent discoveries in bacteriology, and suggestions as to work, at the expense of the association, in the attenuation of the virus of infectious disease, and the possibility of protecting individuals by its use in inoculation.

*The Action of Heat as a Disinfectant.*—The committee on disinfectants briefed the experience of the bacteriologists as follows: "The temperature required to destroy the vitality of pathogenic organisms varies for different organisms. In the absence of spores, the limits of variations are about 18° F. A temperature of 132° F. is fatal to the bacillus of anthrax, of typhoid fever, of glanders, the spirillum of Asiatic cholera, the erysipelas coccus, to vaccine virus, and that of rinderpest, of sheep-pox, and probably of several other infectious diseases. A temperature of 143° F. is fatal to all the pathogenic and non-pathogenic organisms tested (except *sarcina lutea*.) A temperature of 212° F. maintained for five minutes destroys the spores of all pathogenic organisms tested." Translated into the common language, this means that all articles of clothing, bedding, furniture, utensils, and other things in use for the sick of infectious disease, animals as well as men, if they can be boiled, washed or soaked for, say ten minutes, in boiling water, or even water near to boiling, are thereby completely freed from the poison of infectious disease which they may contain, and after an ordinary washing may be used again with safety. This should, however, when possible, be done under the direction of the attending physician, or the Health Officer, particularly in all cases where boiling is not practicable.

*The Quarantine System of Louisiana.—Methods of disinfection.*—An evening was given to this subject and its description by Dr. Holt. He is a ready and entertaining speaker, with the positive notions of one who has been compelled to know whereof he affirms, and his manner is that of intense conviction of the importance of his subject, and the correctness of his conclusions. Without illustration, it would be difficult to describe the apparatus, but the process is as follows: The fumigation of a vessel occupies from thirty minutes to three hours, and the quantity of sulphur (commercial roll) varies from 100 to 700 pounds for each vessel. Burned in proper furnaces the sulphurous acid is driven through a 12-inch pipe, by a powerful fan, into the deepest part of the vessel, entirely displacing the common air. All accessible surfaces of the vessel, except cargo, including ballast, hold, fore-castle, decks, etc., are wet with a solution of corrosive sublimate, of one part to 1,000 of water. From 1,500 to 3,000 gallons are used for each vessel, and the time required is from thirty minutes to two hours. While these are in progress, all bedding, ship's linen, cushions, mattresses, flags, mosquito netting, curtains, carpets, rugs, all personal baggage and wearing apparel are removed to a properly arranged building adjacent and treated by moist heat of at least 230° F. The chamber can be filled with material for disinfection in thirty minutes, disinfection complete in twenty minutes, by moist heat, articles removed dry immediately, and the whole process occupies sixty-five minutes. So that a few hours delay completes the disinfection of a ship and her contents. A further detention for observation after the sanitary treatment of the vessel, is to allow for the possible existence of an infectious disease, incubating in the system of any one on board, if the ship has come from an infected port, or has had any such case during the passage. Cases of infectious diseases are provided for in hospital. So radical an advance has occasioned great interest and thorough investigation. The process has been adopted at the St. Lawrence Station of the Dominion Government, and, we are informed, has given entire satisfaction. Compared with the following method, which Dr. Sternberg saw in use on the ship on which he returned from Europe, at the New York Quarantine, Dr. Holt's methods are nearly as expeditious, with the additional advantage of amounting to something. "With the Deputy Health Officer, who boarded our ship, came a man with a jug. I was informed by one of the officers of the ship that he was to disinfect the vessel. Being somewhat curious to know the method of disinfection employed, I asked the ship's surgeon to go with me to inspect, when, after less than half an hour's detention, we had started from the quarantine station for our wharf. We found that the man with the jug had lowered a bucket, by means of a rope, through



one of the hatches, between decks. Upon pulling up this bucket I found that it contained two or three pounds of some powder which had been wet, probably with some acid solution, and which gave off the odor of chlorine. No doubt when first lowered between the decks there had been a considerable evolution of chlorine, but in the vast space to be disinfected it was so dilute that at the end of an hour I did not detect the odor of chlorine gas when I lifted the hatch, and it was only by approaching my nose to the bucket that I was able to ascertain what disinfectant had been used." He was told that this manuvre with the bucket and powder was to disinfect some hides in the hold. The doctor concludes that the so-called disinfection, which was not disinfection, was for the fee which must be paid by the agent of the ship.

*The disposal of Garbage* received a good deal of attention, but as the methods at present in use (in Montreal, Pittsburgh, and Des Moines), have hardly passed the experimental stage, we will not describe them. Dr. DeWolf, Health Officer of Chicago, has been authorized to build a destructor, and has, we believe, adopted the Montreal pattern with improvements. It will be completed, it is hoped, in January, and in operation, when we shall inspect it. The Health Officer of Minneapolis, Dr. Kilvington, with the Local Board of Health are studying the subject as likely to help them dispose of this very pressing question.

*A Paper, by Dr. Wyman, of the Marine Hospital Service*, urging the putting of all maritime quarantines under the control of that bureau, caused a spirited discussion, but received no support.

*The Sanitary Chemical Analysis of Water*, was discussed in a paper by Dr. Smart of the army. He was unable to be present, and Prof. Daniels, of Wisconsin, a member of the committee, gave an abstract of it; Dr. Hewitt, of Minnesota, was able to state some of the details and conclusions of the report, as much of the experimental work, to which it related, was done in the laboratory of the Minnesota Board.

One of the most interesting papers read was that of Dr. Councilman, Professor of Pathology, John Hopkins' University, Baltimore, upon his investigation of the "Malarial Germ of Laveran." His paper was illustrated by india ink drawings of the creature, for this parasite belongs to the animal kingdom, and in some stages of its growth looks like a microscopic representative of the Octopus. The doctor quoted from his own experience abundant evidence of the intimate relation of this germ to intermittent fever, and, we believe, demonstrated its value as a diagnostic sign in the recognition of that disease, and of some of its stages, in a Memphis Hospital. The matter is of such practical importance that we were anxious to get at least an abstract of his paper, for Health Officers, but we failed. Fortunately, we find a statement by Laveran himself in the *Annales de l'Institut Pasteur* for June, 1887, from which we translate the points of greatest practical interest, (see page 70.)

One of the greatest benefits of the meetings of so representative a body, as the American Public Health Association, is found in the personal relations of members, making new, and renewing old acquaintance, the comparing of notes, and discussion of mutual difficulties, by adjacent or distant Health Officers, and the agreement upon plans of work for the future, the settling of differences much better than by correspondence, or newspaper controversy, and the many little relations hard to define, but none the less real or powerful. None of these things get into official reports, but who that has been there, cannot testify that in his private and personal summing up of the question, What have I gained?—these things outweigh, sometimes, all the rest.

*Place and Date of the Next Meeting.*—Milwaukee, Wis., in November. We are sorry to have it so late, but this is the year of the Presidential election, and sanitarians, as all other good citizens, are interested in the canvass and results. This is the reason assigned for the date. Plans are already forming for the meeting, and nothing that the State Board of Wisconsin, aided by Minnesota, and the Health Commissioner of Milwaukee, can do, will be left undone, to make the meeting a thorough success.

The following named gentlemen were elected officers for the ensuing year:  
*President*.....DR. CHARLES N. HEWITT, *Red Wing, Minnesota.*  
*First Vice President* ....DR. G. B. THORNTON, *Memphis, Tenn.*  
*Second Vice President*....DR. JOSEPH HOLT, *New Orleans, La.*  
*Treasurer*.....DR. J. BERRIEN LINDSLEY, *Nashville, Tenn.*  
*Secretary*.....DR. IRVING WATSON, *Concord, New Hampshire.*  
 (Ex-officio Members Executive Committee.)

The other members of the Executive Committee are: DRs. H. B. BAKER, *Michigan*; S. H. DURGIN, *Massachusetts*; J. N. McCORMACK, *Kentucky.*

### NORWEGIAN LEPROSY.

DR. GRONVOLD, AS TO CASES RECENTLY DISCOVERED.

DR. HEWITT,

*Dear Sir:*—The paper received and the Lepers recorded. We know that the record of Lepers is changing every year, new ones being discovered, old ones dead. The figures (see the last report, 1884-86), are, of course, subject to some uncertainty, as there may, and probably do, exist cases not known or reported, because milder and less conspicuous, and we may add, because it sometimes is difficult to find them out. If the report of the Board had been read, there would not have been a chance for a sensation every time a Leper is discovered. New cases of Lepers have been found every year, and will, probably, for some time yet. But in the light of the fact, that as yet no case has been recorded here in Minnesota, originated from contagion in this State, or from heredity here, I cannot see, how they can make a scare out of the discovery of a new case. Of all the children of Lepers, living here, not one has any sign of the disease, although it is about fifty years that the immigration has been going on from the country where it is epidemic.

That the disease is contagious is beyond doubt, as its history in the Sandwich Islands proves, but practically it has, at least so far, been noncontagious in Minnesota, and these western States, climate and other things being unfavorable to the propagation of the disease that way. Children of Lepers of the worst, most contagious, kind have for years, day and night, been living with, or attending on their sick parent, and have never, so far, caught the disease. But this is old news, brought forth to the public by the State Board of Health, for fifteen years, and by others for twenty years, so I hope it will not be necessary to say more about it.

Very truly,  
CHR. GRONVOLD.

NORWAY, Minn., December 20, 1887.

### THE HEMATOZOAIRES OF PALUDISM.

(THE ANIMAL GERM OF MALARIA.)

BY A. LAVERAN, PROFESSOR A L'ECOLE DE MEDICINE MILITAIRE DU VAL-DE-GRACE.

[An abstract of the latest paper on the subject by the discoverer, which we translate from the June number, *Annales de l'Institut Pasteur*, and commend it to the attention of our medical readers.—H.]

He first described these parasites in a paper communicated to the Academy of Medicine, November 23, 1887, on the parasites of paludism, and since, to date, has demonstrated them in the blood of a large number of patients suffering from the various forms of malarial poisoning. His discoveries have been sustained by the independent researches of other observers, among whom he quotes Drs. Osler, of Philadelphia, and Councilman, of Baltimore. He recalls the various parasites which have been described by writers from straw fungus of Salisbury, to the bacillus of Klebs and Tomasi Crudeli. The pathology of malarial melanaemia is full of obscurity, but the fact is admitted.

He writes: "When I arrived in Algiers, I set out to discover how this coloring matter occurred in the blood of ague patients, and for that purpose studied carefully the lesions of the disease, in the dead body, and the pigmented bodies, in fresh blood; it was in this way that I discovered that beside the pigment laden corpuscles, already described there were in the blood of ague patients' bodies, the parasitic character of which, was indisputable." He describes in detail four varieties, different stages of growth of the same parasite. First, and

most common are spherical corpuscles of varying size, from the one thousandth of a millimetre to that of red corpuscle, sometimes free in the serum of the blood, sometimes attached to the red corpuscles. In the last case the parasite grows at the expense of the blood cell till it is destroyed, and its coloring matter constitutes the spherical pigment granules found in the parasite. These parasitic cells have ameboid movements, and are believed to belong to the lowest order of animal forms. Another form, taken by the parasite, is crescentic, with pigment granules midway between the extremities; in another form the round cell becomes irregular in outline, long slender filaments projecting from one side like the arms of a microscopic octopus. In still another form the pigment matter is in the centre of the cell in irregular clusters; this form he believes to represent the dead parasite. After the paroxysm of the fever the white corpuscles of the blood are found to contain grains of the pigment, and he believes that this coloring matter comes from the destruction of the parasites who obtained it, by themselves, destroying the red blood cell. In this way he accounts for the known pathologic changes in the blood of the victims of ague. He believes the crescentic form of the parasite to occur chiefly in the blood of malarial cachexia, or of the recurring form of the disease. This parasite is most abundant just before the occurrence of the fever, or at that time. A curious fact is that under the influence of quinine the parasites disappear, very rapidly, from the blood. He states that this peculiar parasite has never been found in any other than malarial disease, and that ague has been transferred from man to man by injecting into the veins of a healthy man a little blood taken from another sick of that disease." We shall await with great interest the publication of Prof. Councilman's paper, as he has furnished new proof of Prof. Laveran's discovery, and has, we believe, indicated its value in the diagnosis of the obscure, and recurring forms of the disease, and of the cachexia which is its too frequent sequel in some sections of the country.

### . HOW IS TYPHOID FEVER PROPAGATED?

AN ABSTRACT OF A REPORT READ AT THE INTERNATIONAL CONGRESS OF HYGIENE  
AT VIENNA, (SEPT. 26 TO OCT. 2, 1887.)

BY DR. BROUARDEL, PROFESSOR, AND DEAN, FACULTY OF MEDICINE, OF PARIS.

WE translate portions of this interesting paper from the October number of the *Revue d'Hygiene*, and commend it to our readers as a capital resume of the subject by a representative French sanitarian. He presents the view taken by, perhaps, the majority of foreign Health Officers, and by a large number in our own country. His suggestion of the existence of a mild form of Typhoid Fever, "Typhoidette," standing in the same relation to Typhoid Fever that varioloid bears to small pox, is a very ingenious solution of the immunity which all have seen, but which none have been able to explain.

\* \* \* "I wish to demonstrate that the agents for the propagation of this disease are the water which we drink, the air which we breathe, soiled clothing and the hands of the nurses. These means of propagation have been stated for a long time, but have been hitherto disputable hypothesis, to-day it is possible to assign to each of these means the share which belongs to it. [He quotes first the epidemic in Geneva, Switzerland, of 1884.—H.] It follows, from the observations made in the course of that epidemic, that the increase and diminution of the disease corresponded with the conditions which increased or diminished the pollution of the water supplied to the city. The demonstration of the impurity of the water was furnished by the chemical analysis of M. Ador; and the microbiological examinations made by MM. Foll and Dunant; but they did not find the bacillus of Eberth, Gaffky and Cornil."

Reviewing, briefly, the history of a number of epidemics of Typhoid Fever, of recent date, and which have been carefully studied with reference to their causes, he claims that:

"In the absence of all other evidence, these different facts are of such a character as to compel conviction, and to support the assertion that in all these instances water was the carrier of infection."

As to a specific bacillus, he said:

"We know now, (1,) that the bacillus of Eberth is the microbiological evidence of Typhoid Fever; (2,) that this bacillus will be found, at a certain period, in the faces of persons sick with that disease, and in certain conditions, in their urine. In 1836, Michael and Moers demonstrated the presence of this bacillus in water drunk by a party of people, some of whom had this disease. In the same year, MM. Chantemesse and Vidal discovered this bacillus in water drunk by a family of seven, of whom five had the disease. M. Chantemesse also found it at Pierrefonds, at Clermont-Ferrand. [Places in France where the disease was epidemic.—H.] That this bacillus is identical with that of Typhoid Fever is indisputable. June 4th, 1887, Dr. Benner (of Griefswald) confirmed the results obtained in France, by M. Chantemesse. We believe, then, that we may conclude from these various investigations, that the pathologic significance (valeur) of the bacillus of Eberth is put beyond dispute. This conclusion is not accepted by all writers (auteurs.) Some claim that water is unfavorable to the growth of pathologic bacteria. The experiments of MM. Chantemesse, Wolffhugel, Riedel, Thoinet, and others, have proved that the bacillus of Typhoid Fever can grow and live in water used for drink.

But some physicians readily reply: "It is not the water which distributes the epidemic, for both I, my family, and my children, drank the water and still drink it, and we have not had Typhoid Fever." To this objection one might answer: 1st, that some persons have secured an individual immunity by a previous attack; 2d, that this immunity is not acquired solely when one has had a typical attack of Typhoid Fever. Indeed, between the most severe confluent small pox, and varioloid characterized by three or four pustules, whatever the apparent difference, there is the same disease. "Perhaps," says Lorain, "there is a Typhoidette, as there is a varioloid; nothing prevents the acceptance of this hypothesis, but it is a hypothesis." That which Lorain thought an hypothesis seems to me to-day absolutely demonstrated, and I insist that this term, typhoidette, be admitted into our nosology, as it has the great advantage of recalling the common origin (reports *d'origine*) of the gastro-intestinal conditions which have been observed in all epidemics of Typhoid Fever and which, without being pure Typhoid Fever, were undeniably of the same nature as that disease."

"Does Typhoidette protect from Typhoid Fever as varioloid from small pox? That seems, to me, extremely probable, and that it is to a previous analogous affection, the real character of which was misunderstood, that we ought to refer the comparative immunity which the inhabitants of those places, so frequently invaded by Typhoid Fever, enjoy. And further, the slight severity of these attacks often conceals their character, so that when one inquires as to those antecedents, as indicating a previous typhoid affection, he cannot find them, they were not recognized either by the sick, or by physicians. Here are some other objections: Many investigators have searched, fruitlessly, for these bacilli, in water, during epidemics, and have not found them. These repeated failures are easily explained. The proper method for this investigation has not been accurately ascertained till within a year. A last objection has always astonished me a little. It is said, "You have not found the bacillus in water except where Typhoid Fever is prevailing, or has prevailed; the presence of this organism does not prove that it caused the disease, it is a result and not a cause." The proof furnished by M. Thoinot, in the waters of the Seine, seem, nevertheless, to show that if we find the bacillus in the water above the city, it is not the sick of Typhoid Fever of Paris who have put the bacillus into the Seine at Choisy, but the waters of the Seine which have given Typhoid Fever to Paris.

(1) "Immediate observation and bacteriological researches are in perfect accord that water can be the means for the propagation of Typhoid Fever. (2) Indisputable instances prove that Typhoid Fever may also be spread by the air."

Beginning with Murchison's case (1878), he quotes others to date, and continues:

"In all these instances it will be observed that Typhoid Fever was conveyed to the places infected, by the poisoned air, and, further, that in each instance the air was saturated with moisture. It cannot be said that dry air is incapable of conveying the bacillus, but it seems that, as in intermittent fevers, humidity may be a favoring circumstance."

He believes direct distribution by the hands, through contact with soiled clothing, sheets and the like, possible but relatively rare. He concludes his report as follows:

"The germs of Typhoid Fever are distributed by water, air, the clothing of the sick, and by the hands of their attendants. But from the standpoint of the tribute which the people pay to this disease, water is the distributor in ninety-nine times in one hundred. When a water



supply is polluted by typhoid bacilli, it infects a family if taken from a private well, a group of families, if taken from a source used in common, and a whole community when it is a river or public water supply which has been infected. Experience has taught us that it is in great cities that epidemics of Typhoid Fever maintain themselves, and that it is from these that the contagion of the disease is spread elsewhere."

After recalling the admitted fact that nothing is so expensive as an epidemic and that Typhoid Fever selects its victims from the flower of the people (between the ages of fifteen and twenty-five), he makes an eloquent appeal to the congress to affirm the paramount importance of a pure water supply as the best preventive against this wide-spread and fatal disease. The section, by a large majority, adopted the following:

"The possibility of the propagation of infectious diseases by contaminated drinking water being established, it is one of the most important prescriptions of public hygiene that absolutely pure water should be furnished for the use of the people."

## INFECTIOUS DISEASES OF MEN.

### DIPHTHERIA

AT PINE CITY, MINN.

September 29, acting Health Officer telegraphed: "Diphtheria here, come at once." September 29, the Secretary replied: "Thoroughly isolate infected families. Write full details next mail. Circulars and instructions mailed to you." October 1, Health Officer telegraphed: "Have no physician. Can you send one. Diphtheria spreading." October 3, the Secretary telegraphed to Dr. Brown, Minneapolis. "Please take morning train to Pine City, on St. P. & D. Ry., and report by telegram and mail, facts of Diphtheria. Advise Local Board. Answer." October 4, Dr. Brown telegraphed: "Message received just in time for train. Am on the way." October 5, Dr. Brown reported: "Eight or nine cases. One death. Will go up this morning for few days." October 5, Dr. Brown reported:

Through the inefficiency of the Western Union Company, your telegram of October 3d, was not received by me till 7:45 a. m. Yesterday, the 4th, I took the 8:00 a. m. train for Pine City, as you desired. I met the President and Secretary of the Local Board and the President of the City Council, and was afforded every facility for the investigation of the epidemic of Diphtheria now existing there. I found cases of the disease in six families as follows: (See below.)

The C. babe was with Miss V., September 28 and 29. The children of K. and D. played together before becoming ill. No contagion can be traced in any case thus far. The general health of the village is, and has been, good, with the exception of this and two previous epidemics, which will be referred to later, and which are believed by the residents to have been connected with the emanations from decaying organic matter, uncovered by the drawing off of the water from Cross Lake, Devil's Lake and certain bayous which either form parts of or are immediately connected with Snake river. The town occupies a peninsular, which is nearly surrounded by these connecting bodies of water. At the east of the town the river is bridged by the "Chengwatana Dam," which raises the water in the bodies above mentioned some six or seven feet, and causes the flooding of large tracts of land, partly sloping banks and partly areas of slough and marsh. Some six feet of water was drawn off in July, as I am informed, leaving on the previously flooded areas considerable amounts of organic matter uncovered. This condition has continued to the present time, though the water has been raised somewhat by the heavy rain of Sunday, October 2d. A green vegetable growth has developed over these uncovered areas, and the decaying organic matter has produced very offensive emanations, and from the exposed situation of the town the health of the people could hardly fail to be influenced unfavorably. The flooded and at present uncovered areas are several hundred acres in extent, said to be five hundred or more. At the west of the city, near the former site of a steam mill, is a deposit of sawdust several acres in extent, and from one to six feet in depth. A part of this deposit is filled with water when at flood, and at low water presents a large amount of organic matter in favorable condition for rapid decay. The hard frosts of the past few days, together with the higher stage of water, has had a very favorable influence upon the offensive emanations, so that they have not been, and are not, very noticeable.

I am prepared to believe, however that the universal complaint of the people living here, with reference to the stench arising from these sources, have been well founded.

No other obvious occasion for the present outbreak appears. The town site is of sand, without subsoil. Water is obtained uniformly from drive wells at a depth of sixteen or eighteen feet, and the depth of water in these wells varies directly with the stage of water in the river. The water in the different wells is said to be very uniform in quality. Rough tests do not indicate any great excess of chlorine in the well water, and even less than in the river water. The local conditions about the houses, so far as I have observed, are as favorable as exist commonly in small villages. I am told that the water has been drawn off by the Chang-watona Dam only four times, and that in three of those instances a serious epidemic has followed. Nine years ago, following the drawing off of the water, there was an epidemic of typhoid fever; six years ago, also, there was an epidemic of diphtheria, with a mortality, from all causes, of thirty-five in three months, while the ordinary mortality (in a population of 600) is not to exceed six deaths annually. The inference from these facts is to me unavoidable that the effluvia from these alternately flooded and uncovered areas are a considerable element in the causation of the present outbreak.

October 6, Pine City. I returned here this morning, and shall remain a few days. I found one new case, indicated in the tabular statement, and a suspicious case in still another family is under observation. No contagion can be traced in any case. The Board has acted promptly and efficiently, and I hope there may be no spread from contagion.

I append hereto a diagram, kindly prepared for me by J. F. S. of Pine City, showing the situation of the town with reference to its surroundings.

Yours very truly,

EDWARD J. BROWN, M. D.

P. S.—October 7.—The suspicious case has developed into a severe case of Diphtheria. Two other cases have been found this morning, as well as two convalescents in same family, all probably, diphtheria.

The Local Board of Health employed him to act as their Health Officer. His subsequent reports relate to the progress of the disease, during the time which he was stationed at Pine City. His final report, made January 3, 1887, as follows:

No.	Parent	Sex	Age	Date of Attack	Condition
1.	.....	F	20 years	September 10	Very mild.
2.	W. F. G.	M	9 years	September 10	"
3.	M. C. S.	M	14 years	September 25	"
4.	Geo. K.	M	13 years	September 25	"
5.	Geo. K.	M	7 years	September 25	"
6.	T. H.	M	9 years	September 35	Very mild.
7.	Geo. K.	F	8 years	September 27	Died, September 30.
8.	J. E. N.	M	5 years	September 27	"
9.	E. V.	F	16 years	September 29	"
10.	H. C.	M	16 years	October 2	"
11.	Julius D.	M	8 years	October 2	"
12.	Julius D.	M	6 years	October 2	"
13.	Geo. K.	M	2½ years	October 2	"
14.	Henry C.	M	4 years	October 2	"
15.	T. H.	M	7 years	October 3	"
16.	L. McK.	F	9 years	October 4	Very mild.
17.	T. H.	M	2½ years	October 4	"
18.	W. F. G.	F	10 years	October 5	"
19.	T. H.	F	13 years	October 6	"
20.	J. W. H.	Wife	.....	October 6	{ Very mild. Not reported till October 25.
21.	Henry C.	M	9 years	October 7	"
22.	W. F. G.	F	12 years	October 7	"
23.	W. F. G.	M	5 years	October 9	"
24.	D. McD.	F	3 years	October 9	"
25.	J. E. N.	M	11 years	October 9	Very mild. Not rep'd at time.
26.	A. F. H.	F	Adult	October 10	"
27.	A. F. H.	F	Adult	October 10	"
28.	W. F. G.	M	3 years	October 11	"
29.	L. H. McK.	M	7 years	October 11	"
30.	D. McD.	F	5 years	October 12	"
31.	H. C.	M	6 years	October 13	"
32.	W. F. G.	M	11 years	October 12	Very mild.
33.	T. H.	F	1½ years	October 17	"
34.	J. W. H.	M	7 years	October 22	"
35.	Hans C.	F	4 years	October 24	"
36.	Geo. K.	F	5½ years	October 26	"

No.	Parent	Sex	Age	Date of Attack	Condition
37.....	James H.....	M.....	10 years	November 9.....	Very mild. Not rep'd at time. Severe, involving both pharynx and larynx.
38.....	A. G. P.....	M.....	8 years	November 10.....	
39.....	James H.....	M.....	3 years	November 11.....	
40.....	James H.....	F.....	6 years	November 12.....	
41.....	D. F.....	F.....	10 years	November 15.....	
42.....	Geo. K.....	F.....	13 years	November 16.....	
43.....	J. G.....	F.....	9 years	November 16.....	
44.....	A. G. P.....	F.....	2 years	November 17.....	
45.....	Hans C.....	M.....	6½ years	November 28.....	

I had charge of this epidemic from October 8th to December 19th, and thirty-eight of the above forty-five cases were professionally cared for by me. Quarantine was maintained, so far as possible, for three weeks following convalescence, except in the mildest cases. In case of No. 45, quarantine was ordered to be continued till January 8, 1888, quarantine having been removed from all other cases.

I have reason to believe that the fresh outbreak following November 9, was the result of insufficient quarantine restrictions in case of a few mild cases. E. J. B.

#### ARTHUR TP., KANABEC CO., (MORA.)

November 10, chairman board supervisors telegraphed: "Diphtheria bad here; send physician." Same date, Secretary telegraphed chairman board supervisors: "Have telegraphed Dr. Brown, Pine City, to visit you," also to Dr. Brown: "Please investigate Diphtheria, Mora Tp., Kanabec county, N. Halvorson, chairman. Answer." November 11, Dr. Brown telegraphed: "Will go to Mora this p. m." November 14, Dr. Brown reported:

In response to your telegram of November 10, I proceeded to investigate Diphtheria at Mora, Kanabec county. Drove there twenty-six miles, on the eleventh, and returned on the twelfth. Met Mr. Halvorson, Chairman of the Board, and Dr. Thomas, the physician in charge of the cases. Found the following facts: E. A., ten years old, daughter of A. A., died of laryngeal diphtheria on November 4th, at house of Nels Q. She became ill, October 31. No known exposure. Her sister Melinda had been at work, previous to October 15, at the house of A. G. P., Pine City, but did not come in contact with any Diphtheria, as far as known, and was not ill herself. (The P. family claim to have been well until November 10.) M. and her father went from Mora to Camp, on October 26, leaving three sisters at Q's. Bedding used by E. was smoked and aired after her death. B. Q., seven years, occupied same bed, became ill, October 8th. I found her tonsils free from membrane, but some membrane in pharynx and a large amount of nasal discharge. Dr. Thomas said tonsils had been covered. Child did not appear to be suffering greatly. There is no question as to diagnosis.

At Ole H.'s and Andrew H.'s (living together) were two small children slightly ill since the tenth, one having slight evidence of diphtheria on one tonsil. Older child had played with Betsey Q. before she got sick.

At Daniel S.'s, child at breast, eleven months old, died of membranous croup, November 7; ill since third. Had white patches on both sides of throat. The older children had been and are well. No exposure known except that the older children had been at school with Edna A. School was closed, November 4. All these families are quarantined. I advised the Board as to its duties with respect to quarantine and disinfection.

November 18, chairman board of supervisors telegraphed: "Send physician who can stay. Local physician sick." November 18, Secretary telegraphed chairman board of supervisors: "Have telegraphed Dr. Brown to visit you." To Dr. Brown: "More Diphtheria at Mora. Physician sick. Go at expense of town. Stay, if possible, long enough to control. Letter care chairman." November 20, Dr. Brown reported:

Your letter and telegram with reference to Diphtheria at Mora, Kenebec county, received. In accordance with your wish, as expressed in the telegram, (November 18,) I drove to Mora, yesterday; saw all the cases in the village and sent medicine to those living outside, whose condition, as reported to me, was such that I thought better not to see them at the expense of neglecting cases here.

I found, in the family of Nels Quick, the following cases: Mrs. Q., Annie, four years; babe of fifteen months, all ill since twelfth; Nels, ten years, ill since fourteenth. The two youngest children are bad cases. Betsey, the first case, is now well.

At house of Andrew H. and Ole H. three young children have had very slight evidences of Diphtheria. Two of these I reported after my first visit.

At Andrew N.'s, Agnes, six years old, ill November 15, with headache and slight fever, sixteenth, I think. Dr. Thomas pronounced the case Diphtheria; found patches on tonsils. She has had no sore throat. On the seventeenth she was covered with an eruption, which Mrs. Murphy, who had been visiting the cases in the want of medical attendance, pronounced that of measles. Mrs. Murphy told them that the case was not at all like Diphtheria, and so the child came down stairs with other children. I found distinct evidence of Diphtheria, on both tonsils, and ordered isolation of the case and fumigation of the lower rooms. No known exposure.

Dr. Harold Thomas, (not Holmes,) the physician and druggist, has also been ill with Diphtheria since the seventeenth.

There are some cases a few miles outside, which Mrs. M. has been visiting and which she had reported as doing well.

In accordance with the wish of Chairman H., I prescribed for the cases and had medicine sent out to the cases in the country. I returned here the same day. I expect to go to Mora again to-morrow and to stay over night so I can see all the cases.

#### GRASS LAKE TP., KENABEC CO.

November 28, Dr. Brown telegraphed: "Two cases Diphtheria; other centers of infection probable. Shall I investigate?" Same date, Secretary replied: "Write chairman by messenger to isolate cases and come to you." Same date, Dr. Brown reported:

I was called out to Grass Lake Township, Saturday, 26th. Found two cases of Diphtheria in family of John A. S. Girl, twelve years old, very ill; laryngeal Diphtheria, since twenty-fourth. First ill, twenty-first; felt so much better, twenty-third, that she *attended school*. School closed for the winter, November 26. Boy, five years, mildly ill since November 24. The girl says there have been several cases of sore throat in school, (No. 10,) notably two cases, one week before she was taken ill. I was told at Mora, yesterday, that there had been quite an epidemic of sore throat down the road, (meaning road to Grass Lake and Pine City.) These cases were said to be not Diphtheria but *putrid sore throat*.

I sent word to Chairman of Supervisors, O. P. Hogeland, of Grass Lake, to quarantine and have disinfected two families, those in which sore throats were said to have existed. I asked you last night, by telegram, if I should investigate further. I fear there has been considerable very mild Diphtheria out there, which may produce serious results now that cold weather is setting in with consequent crowding and ill ventilation. Most of the houses consist of a single room rendering isolation or even disinfection by fumigation, in cold weather, practically impossible. No new cases here or at Mora.

#### December 12, reported:

I have just returned from Grass Lake, where I have made what I had not previously been able to make, a careful investigation of the various families, sending children to school attended by the Swans, and presumably exposed if not infected. The result is a conviction that the reports current about putrid sore throats in that section were not well founded. In district No. 10, I visited every family which contained children of school age. Found no signs of Diphtheria, past or present. Some of the children had had colds and accompanying sore throats, but I question if there has been any case of Diphtheria except the Swans. In the family of U. L., three children had had sore throats, about the same time, and I left sulphur with directions for fumigation. In District No. 5, I was told by the teacher that most of the scholars had had the mumps, and looking up some families who were reported to have had sore throats, I found no history of anything but sore *necks*. The S. children are well. No new cases have developed and we have reason to hope the trouble in that quarter is past. The same may be said for Mora. My one case here is not yet convalescent, but I hope will be in shape to leave by Saturday.

Diphtheria having now appeared in the above districts, and threatening to become epidemic, the Secretary, under section 14, chapter 132, laws of 1883, ordered the co-operation of all Boards involved in that vicinity. In accordance with such request, a conference of these Boards was held in Pine City, December 3, at which time Dr. Brown was employed for two weeks' services as their common Health Officer, and put in charge of the entire outbreak, under direction of their Boards and the State Board. The disease rapidly disappeared, and Dr. Brown resigned, December 19, the outbreak having apparently ceased.



## VASA TP., GOODHUE CO.

November 23, 1887, first notice of disease from Dr. Conley, Cannon Falls: "Two bad cases in Orphans' Home; forty children in the school." 24th Secretary wrote Dr. Brynildson, Health Officer, for facts concerning the outbreak, and the action of the Local Board of Health in the matter. Same date Town Clerk reported: "Two cases in Orphans' Home; two other cases in township. School closed." November 25, Dr. Conley reported: "Nine new cases to-day; eleven in all. Forty children exposed. First case, Friday; second, Sunday; all light. Sick isolated, and the well removed to school house, belonging to the Home." 25, Dr. Brynildson, Health Officer, reported: "One case, isolated, nearly well. November 23, two cases in Home. To-day ten cases, isolated. School closed. Sick removed to second floor. Did not report first case, as diagnosis doubtful. Please send nurse for Home." 26th, Town Clerk reported: "Diphtheria on increase. Please send nurse." November 28, Secretary wrote: "Report date of first case, or suspicious case. Were there any cases in school before it closed? If so, report name of each scholar, and their whereabouts. Every effort is being made to secure nurse." November 27, Dr. Brynildson, reported: "Fifteen cases at Home; all mild. No new cases, except a doubtful one, reported by Dr. Conley." 28th, Secretary wrote Dr. Brynildson to see Town Clerk as to what he had written to him. Same date, Dr. Brynildson reported: "Cases recovering rapidly. No new cases heard of." November 28, Dr. Conley reported: "Fifteen cases in all in Home at present. Special effort making to prevent visiting by outsiders at Home." November 30, Dr. Brynildson reported: "Five cases at N. P. O.'s; eight children in family. I was out all day yesterday." 30th, Dr. Conley reported: "Cases at Home doing well. Will go down to-morrow." November 30, Town Clerk reported: "More or less sore throat all the fall. First suspicious case, family J. A. P.; three boys sick.; oldest one attended parish school after recovery. November 10, Nora H'n sick at district school. November 18, Hilma B'n, Belle Creek, sick, attended parish school. November 21, one case in family, Rev. N.; five cases in family, N. P. O.'t, and two at N. Y. N.'s. Those at Home improving." December 3, Dr. A. T. Conley reported: "Eight cases; one death at N. P. O.'s. Those at Home doing well, except one with croup. Saw Trustees and told them to call meeting and establish hospital for the well, or the sick, for families where the disease had appeared, and to see you. All schools closed." December 3, Dr. H. E. Conley reported: "Three new cases; twenty-one in all." December 4, Dr. Brynildson reported: "One death at O.'s and one at B.'s, from diphtheretic croup. Have case in my own house, removed to up stairs." December 5, Secretary visited Home, and held conference with Local Board of Health, Dr. Conley and Dr. Brynildson. Dr. Brynildson was employed by the Board to make a complete survey of the town, visiting every family. December 5, Dr. Brynildson reported his case better. December 6, he reported that he had visited twenty-eight families in the north-eastern portion of the township, and found no Diphtheria. December 27: "Visited twenty-two families to-day, and found no cases." December 8, he reported: "One death at home this a.m." December 9, he reported: "Visited twenty-five families yesterday. No Diphtheria. New case in my family. Will stay at home few days." December 10, he reported: "Three cases now in my family, doing well. Sent three members away. No new cases elsewhere." December 12, he reported: "No new cases and no more deaths. Cases doing well. Will delay inspection to have my clothes disinfected." December 17, he reported: "One new case at Home. No spread. One death at S. B.'s, Belle Creek. Heart failure." December 22, he reported: "Visited southwestern part of township. No Diphtheria. No new cases except at Home; one last week, one this." December 25, he reported: "Visited twenty-six families yesterday. One new case at B. A.'s. Sick Monday. Visited Sunday where children had mild sore throat." December 29, he reported: "Visited fourteen families yesterday. No Diphtheria. Have ten or fifteen more to visit."

The disease at date, January 10, 1887, has apparently disappeared. Isolation and disinfection at the Home and in affected families as thorough as pos-

sible. Easier at the Home than in small houses, with large family in winter. In last case isolation of the family is most successful.

### INFECTIOUS DISEASES OF ANIMALS.

#### PLEURO-PNEUMONIA IN CHICAGO.

January 3d, 1888, telegraphed to Dr. Salmon, Chief of Bureau of Animal Industry: "Advise by telegram as to removal of quarantine against Cook County." He replied:

This department will not remove restrictions from Cook County, Illinois, for some weeks. The exact date will depend upon results of inspections now in progress; will give public notice when it is deemed safe to take such action.

#### GLANDERS IN EXCELSIOR.

DR. J. R. WALKER, H. O.

FIRST notice by telegram from Health Officer, February 27, 1886, reporting suspected case, and asking for instructions and Veterinary Surgeon. Secretary immediately replied, to isolate all suspected cases, in the care, and and at the expense of the owner, and then to select, employ and pay a Veterinary Surgeon to make the examinations, and base their further action upon his written certificate, and sent file of Glanders blanks and circulars. March 6, Health Officers reported that the case had been killed on certificate of Veterinary Surgeon and barn disinfected.

March 31, Health Officer reported another case of suspected farcy, this time in livery stable owned by O. S. Gates; isolated, awaiting development of the disease. August 30, he reported the horse killed. September 24, another case in same barn, isolated. June 4, 1887, he reported case before isolated, released, as suffering from non-infectious nasal catarrh. November 9, he reported four other horses in the same barn killed for Glanders, on certificate of Veterinary Surgeon. Disease first appeared in this stable in February, 1886, as above, since then several horses have died. The barn is now in charge of Health Officer, undergoing a process of disinfection.

ONE WAY IN WHICH GLANDERS IS SPREAD—November 2, 1887, the Health Officer of Minneapolis reported that he had killed horse as glandered, on certificate of veterinary surgeon, owned by Wm. O'Brien, of Chanhassen Township, Carver County, who said that he traded for it from J. Kirn, of Laketown Township, Carver County. Immediately, on receipt of this notice, the Secretary reported the facts to the Chairman Board of Health of each township mentioned above; asking from them prompt investigation and report. November 5, Jacob Wartman, Chairman of Chanhassen Township, reported that they, at once, on receipt of Secretary's letter of the third, made an examination of Wm. O'Brien's horses, stable, etc., and found all healthy. The horse that was condemned and killed in Minneapolis. Wm. O'Brien bought in trade of J. Kirn, of Laketown Township, October 31. J. Kirn bought the horse of J. Radde, of Waconia, and Radde got it from livery stable kept by O. S. Gates, in Excelsior, where Glanders was in 1886. The Chairman wrote: "We will make further investigation throughout the township." November 8, Secretary notified R. Erland, the Chairman Board of Health of Waconia, of the above-named, and asked for an investigation and report.

November 8, Henry Reitz, the Chairman of Laketown Township, reported, that on receipt of Secretary's letter of November 3, he called a meeting of the Local Board of Health at once, to be held at the stable of J. Kirn. They found two horses, apparently healthy, and stable in good condition. They, however, for safety, ordered the isolation of Mr. Kirn's horses for fourteen days.

November 11, Dr. Diessner, the Health Officer of Waconia, reported that the Secretary's letter to Chairman Board of Health of Waconia Township had been referred to him, as Mr. Radde resides within jurisdiction of his Board; that their Board had examined Mr. Radde's horses but found no symptoms of

Glanders; that Mr. Radde says the horse referred to showed no signs of disease while in his possession. November 8, the Secretary wrote to the Health Officer of Excelsior for facts concerning the report that the horse referred to came from the barn of O. S. Gates, of his village, to which he promptly replied, that Mr. Radde did receive the horse from said owner, but man in charge says that horse showed no signs of disease when it left his care. Mr. Gates had died after Mr. Radde received the horse. Has had disease in his stable since February, 1886.

Luckily no outbreaks in these townships have been reported as having occurred from exposure to this animal, to date.

**A** **N** **O** **T** **H** **E** **R** **I** **N** **S** **T** **A** **N** **C** **E**.—August 9, 1887, the Secretary learned that a mare condemned as glandered in Green Lake Township, Kandiyohi County, had been taken by a veterinary surgeon to Sauk Centre for treatment. August 11, he notified the Health Officer of Sauk Centre of the facts, and requested him to watch out for the animal, and to act according to law. September 4, Health Officer reported that the mare from Green Lake Township, Kandiyohi County, had been discovered by him, and was ordered shot, and that trouble from that source had ceased.

#### MALIGNANT CATARRH OF CATTLE.

Reports to this office show that this disease is not uncommon in Minnesota, other States and abroad, causing considerable mortality. It is popularly associated with black-leg. (from which it differs in not being infectious.) There have been few attempts to investigate its causes with a view to the prevention or control. Prof. Law very cordially approved the suggestion of the Secretary as to the possible influence of some of the fungi on land and water plants eaten by stock in swampy pastures, and it is intended to continue the search as soon as pastures are in grass, and to continue it through the grazing season. Local Boards can aid by calling the attention of stock growers to the matter and by putting them in correspondence with the Secretary.

*Malignant Catarrh of Cattle, Havana Tp., Steele Co.*—First report, December 20, 1886. January 18, visited by Dr. Davis, member State Board of Health, in company with local V. S. No cattle sick then. Not heard from again till June 14, 1887. June 14, Secretary visited herd. July 20, Dr. Law, Chief Inspector Bureau of Animal Industry, visited herd. Dr. Law pronounced it malignant catarrh, not contagious. Other deaths have occurred since the last visit by Dr. Law. He again visited herd, at request of Secretary, October 8, 1887. The cause of the infection not being known except that it was local, the Secretary suspected vegetable parasites from water or food, and requested Dr. J. H. Sandberg, a skilled botanist, to investigate. He did so, but the season being so late, not much was accomplished. This investigation will be renewed on the opening of spring. (For details of outbreak, see PUBLIC HEALTH, vol. III., pps. 33 and 59.)

*Nininger Tp., Dakota Co.*—Reported, October 5, 1887. Visited by Dr. Sandberg, for botanical investigation. (See his report on page 80, of this issue.)

#### DR. SANDBERG'S REPORT.

SECRETARY OF THE STATE BOARD OF HEALTH OF MINNESOTA,

*Dear Sir:*—In accordance with your instructions, I went down into Steele and Freeborn counties, to examine into the pastures, used by sick cattle, in regard to their botany, drainage, water supply, etc. The season being so far advanced, my report will be rather meagre, very few fungi were found and no Algae. The fungi gathered are now under determination and will be reported later.

Mr. F. Ahren's farms of Havana, Steele county, was first visited. This farm, as well as the others I went to, are situated on what seems to have been a large glacial river. The pastures are low and swampy with poor drainage into Strait River. The soil is: 1 @ 2 feet of black loam; 5 @ 6 feet of yellow clay; 20 @ 35 feet of blue clay. Then gravelly land in the clay are found some boulders.

Dr. Sandberg identified about eighty specimens of plants in the pasture,

but owing to the lateness of the season, a full description is deferred till warm weather.—H.

*History of the Outbreak.*—F. Ahren's first loss of cattle was during the winter of 1885-86, but says that the disease those cattle died from was not the same as those who died during pasturing months; there was no discharge from the nose and rigors.

At my visit, October 18, his cattle were looking well, and seemed to have good care. The ventilation in the barn was rather poor but as the cattle were not shut up in the barn during summer months, it would have no bearing upon their sickness. All the cattle were watered from his well, and as you have analyzed the water and found no bad results, the cause must be somewhere else. Close to his house and barn is a bad slough with stagnant water, but during the whole summer he had a person to watch the cattle so that they would not drink from that slough. Plenty of condiment were given the cattle both during the winter and summer, and were in good condition when turned out to pasture this spring. Among the cattle he lost were just as many old as young. His stock is mostly scrub stock mixed with some Durlam.

Next place seen was W. C. Leib's, at Pratt's Station. Geological formation same as at Mr. Ahren's, so was also the flow. He lost two cows and the heifer escaped. There was a dried up slough in the middle of his pasture. Cattle watered from the well. Good stabling. His boy, and two of his neighbor's boys, were poisoned, last summer, from the leaves of a willow (*salix depressa*), which he showed me, but as the leaves were all gone, could not tell if there had been any poisonous fungi on it or not.

From Leib's place I went to Mr. Holmes', at Geneva Lake, where the most cattle have died. He has pasture of 1,700 to 2,000 acres. The pasture is low, with drainage, during high water, into Geneva Lake. When the water subsides (July-October) cattle are watered at the lake, to which they have free access. Plenty of condiments are given them, such as salt, sulphur, saltpeter, ash, etc. About 600 cattle pastured there last summer; of them twenty-two died, all yearlings. There being over 500 yearlings in the herd, may be the reason why only the young died. There was no lack of feed, as fifty to seventy-five tons of hay might have been cut at the time I was there. Mr. Holmes first noticed the disease nine years ago, when the mortality was very great. After that it kept decreasing until the last two years, when it has increased again. [Here he gives a list of deaths.—H]

In 1886, most of the cattle died during the months of July and August, and this year in May and June. In pastures adjoining Holmes' there have been more or less deaths. Their history I had no time to learn, but they have all died from the same disease, with symptoms as described by Prof. Law.

Last Friday I went to Nininger, Dakota county, to see in regard to cattle disease, according to your instructions. Not finding Hon. I. Deunelly at home, I went to C. LeVesconte to get what information I could in regard to the history, botanical investigation being out of the question, as the ground was covered with snow. As none of his cattle had died, and as he had no facts but only hearsay, I went to J. S. Featherstone's, who had lost three calves, September 13, August 15 and 19. W. W. Poor lost two calves in October; R. L. Peak, two calves in October; J. Maclaren, two calves in September; Mrs. A. Heron, four calves in September and October; W. Sjogren, two calves in October. Symptoms were hard to get at as the most were seen only after death, and the disease lasted only twenty-four hours, but those who saw them say that there is a good deal of tympanitis with oedema of the hind legs, which turn black after death, also a bloody mucous discharge from nostrils. The pasture is an island on the Mississippi River bottoms, with good water supply both from river and from a lake. Every year there have some cattle died by the same disease, (black-leg as they call it.)

Respectfully,

MINNEAPOLIS, November 1, 1887.

J. H. SANDBERG, M. D.

*Suspicious Disease in Carlisle Tp., Otter Tail County.*—First notice received, April 12, 1887. The herd was immediately isolated, (175 head,) an investigation was made by Secretary, April 15, 1887. A subsequent investigation, was made by Secretary and M. R. Trumbower, V. S., U. S. Veterinary Inspector, April 30, 1887. They attributed the mortality to improper care of stock during winter. (See page 14, vol. III, PUBLIC HEALTH.) The isolation was raised April 30, 1887. For details of outbreak see PUBLIC HEALTH, pp. 1, 14 and 16, vol. III.



## CORRESPONDENCE.

Opinion of the Attorney General as to villages organized under the general village law, returning vital statistics independent of the towns in which they are:

OFFICE OF ATTORNEY GENERAL, }  
ST. PAUL, Minn., January 19, 1888. }

DR. HEWITT, SECRETARY STATE BOARD OF HEALTH:

Your favor of the fourteenth instant, containing letters relating to obtaining vital statistics in certain towns in Carver County. While the relation existing between the village and town in the case of villages organized under our general village law is a somewhat vague and shadowy one, under the decisions of our courts, yet so far as the villages are given power by the law, they are separate and distinct from the towns. It is true that the Supreme Court has held that for general election purposes they are a part of the town, although that question is again before the same court and is being reconsidered, but as above suggested, in all matters where they are given authority under the statute, they act independently of the town. This would apply to the subject of vital statistics. The law expressly provides that the Board of Health of the village shall furnish and report for the village, and Town Clerks shall furnish for townships, therefore for the purpose of obtaining these statistics they are as separate and distinct as though they were incorporated cities, as fully as they are,—to illustrate: in the matter of management of their internal affairs. This, I think, fully covers the question raised by your inquiry. I return the enclosed letter as requested.

MOSES E. CLAPP, Attorney General.

*DISINFECTION OF THE DEAD OF DIPHTHERIA FOR PURPOSE  
OF TRANSPORTATION.*

The following correspondence explains itself, and is published at the request of the Health Officer of Winona, whose last letter puts the matter in its true light.

WINONA, Minn., November 10, 1887.

DR. HEWITT, SECRETARY STATE BOARD OF HEALTH:

On the fourth day of this month, (November,) a child, named Emma Sherer, about five or six years old, whose father lives here, died in Milwaukee, Wis. The attending physician gave a certificate of death, giving the cause of death as *Diphtheria*. This certificate was made on a printed blank; one copy, with the word, "Diphtheria," plainly written, nailed upon the box containing the casket, and another copy given to the father of the child, who accompanied the remains home to Winona. The remains of the child, reported to be dead of Diphtheria, were in a plain wooden casket, inclosed in a common box, without any air-tight lining of any kind. The remains, in this shape, were received and shipped on the night of the fourth of November, by the Chicago, Milwaukee & St. Paul Railroad, from Milwaukee to Winona. The remains arrived in this city, sometime the same night, or on the following morning, and were delivered to an express or liveryman, who, without any permit from Health Officer, conveyed the same to the private residence in this city. The matter was accidentally discovered by a citizen on Sunday, the sixth instant, and at once reported to the Health Officer, who, at once, went to the residence and found as follows: The casket had been in the parlor of the house, having been taken from the box, friends had been freely admitted, and a public funeral was about to be held. People, men, women and children, were already assembling. The Health Officer made the audience aware of the situation and danger, directed that all should retire, except a few men who should be needed to attend to the burial. Ordered that a guard be stationed at the door, to warn the people. A burial permit was now given by the Health Officer, in order that there should be no delay in the burial. The premises were ordered to be disinfected. The object of this report is to bring the matter to the State Board, and to ask that the Wisconsin State Board, or other proper authorities, be asked to attend to this matter, of the violation of law in this shipment and delivering of infectious remains in this city. You will be notified if any cases result apparently from this infection.

Yours, FRANKLIN STAPLES, M. D., Health Officer.

November 16, Secretary forwarded copies of the above complaint to Dr. Reeve, Secretary State Board of Health, and to the Health Commissioner of Milwaukee, Dr. Martin. The following are their replies:

APPLETON, Wis., November 17, 1887.

DR. HEWITT:

Your favor of yesterday, enclosing letter from Dr. Staples, stating that the body of a child,

dead from Diphtheria, had been shipped from this State into yours, without proper precautions, is at hand. I have written Dr. Staples for additional information, and will investigate the matter fully. It is the policy and purpose of this Board to secure a full compliance with the law on this subject, a copy of which is enclosed, and I have reason to believe that all our railroads intend to obey it. I am, therefore, unable now to understand how this could have occurred. Should further information about it come to you, please write the same fully to me.

Yours, J. T. REEVE,

Secretary State Board of Health of Wisconsin.

MILWAUKEE, Wis., November 17, 1887.

DR. HEWITT:

Yours of the sixteenth is at hand, and I hasten to give you the facts of the case referred to, in detail. On November 4, John La Grand, an undertaker, applied for a permit to ship the remains of Emma Regina Scherer, to Winona, Minn. Mr. La Grand is familiar with the State law, governing such matters, and at the time made a sworn statement that such law had been complied with, a copy of which I enclose, as also a copy of the State law. You will see that, so far as we are concerned, there has been no violation of the law, either in the spirit or letter, and while in my opinion the law is defective, there is nothing left for us to do but obey it. Another session of the Legislature will be asked to amend by refusing permission to ship such bodies. Your local authorities were certainly blamable in allowing any one to touch or remove the remains of any one without authority from the proper Health Officer. I inclose a circular, given with the burial permit in every case of contagious disease, from which you will see that every precaution is taken to prevent the spread of disease. I am pleased to answer yours, and if you have any law, local or State, regulating such matters, I should be pleased to secure a copy, and beg leave to assure you of my hearty co-operation in your lawful endeavor to restrict these diseases. I do not believe there is any cause for alarm regarding this case.

Yours very truly,

R. MARTIN, M. D.,

Commissioner of Health.

I, John La Grand, undertaker, doing business at 692 Third street, city, do hereby certify, that I have prepared the body of Emma Regina Scherer, who died of Diphtheria, in this city, to-day, with an abundance of disinfectants preparatory to shipping the same to Winona, Minn., and have also used an air-tight case for the transportation of the body.

November 18, Dr. Martin inclosed additional affidavit of J. La Grand:

I, John La Grand, undertaker of this city, do hereby certify that I have prepared the body of Emma Regina Scherer, the child, five and a half years old, who died of Diphtheria in this city on November 4, 1887, and whose body was shipped to Winona, Minn., on that day, in accordance with the laws of the State of Wisconsin, Chap. 168 of 1881, in the following manner, viz: after embalming the body, I personally saturated a double sheet with disinfecting fluid, wrapped the same around the body and placed the same in air-tight casket, then placed it in a rough box, then I filled sawdust saturated with disinfecting fluid around the casket, solid to the top and sides, making it air tight, and screwed the lid on to the case with six two-inch screws.

November 24, Dr. Reeve wrote again:

In further reference to the matter of transportation of the body of Emma Scherer, dead of Diphtheria, from Milwaukee, in this State, to Winona, in Minnesota, which it was alleged by Dr. Staples, was done in a criminally careless manner, and in "violation of law," and which has been the subject of official complaint from your Board to this Board, to the Board of Health of the city of Milwaukee, and to the railway transporting the body, I beg leave to state that I had some direct correspondence with Dr. Staples in reference to the matter, and that having investigated the matter, I find that Dr. Staples was mistaken in reference thereto; that the body was properly prepared for transportation by sufficient disinfection; that it was transported by permission of the health authorities of the city of Milwaukee, they being satisfied of that fact, and that the railway authorities are blameless in reference to the transportation of the body, receiving it only when accompanied by the permit of the health authorities for its removal, and by the affidavit of the undertaker that it was in an air-tight casket in addition to being properly disinfected. As this investigation was made primarily on the complaint of Dr. Staples, I have written the facts relating thereto more at length in a personal letter to him, which I enclose for your information, with request that after reading the same you will forward it to him.

The following is the letter:

APPLETON, Wis., November 24, 1887.

DR. STAPLES, HEALTH OFFICER, Winona:

I have your favor of the nineteenth inst., giving further particulars in reference to the arrival in your city of the body of Emma Scherer, dead of Diphtheria, and enclosing the certificate which was in the hands of the father of the child accompanying the body, and in connection with the President of this Board I have spent a considerable time in investigating the charges made in this case. With the strongest possible desire to do everything to protect the public health, and to have all laws regulating the transportation of the dead fully complied with, it seems to me that in this case you have no ground for complaint, and that the criticisms and censures expressed and implied against the health authorities of this State, and against the railway that transported the body, are without foundation and therefore unjust. As evidence of the fact that matters were not as first understood by you I call attention to your letter of complaint to Dr. Hewitt, in which you state that a certificate *from the attending Physician*, giving the cause of death as Diphtheria, was nailed upon the box containing the casket, and that a duplicate of this certificate was given the father, who accompanied the body of the child; the fact being, as evidenced by the certificate which the father had, and which you forwarded to me, as well as by evidence otherwise received, that this certificate was not from the attending Physician at all, but that it was a permit from the Health Department of the city of Milwaukee, authorizing the removal of the body to your city, when prepared according to the laws of this state, which at once puts an entirely different face upon the whole matter. In addition to this evidence that the removal of the body was with the knowledge and by authority of the Health Department of the city of Milwaukee, and not in "violation of law" as stated in your letter to Dr. Hewitt, I have copy of affidavit of the undertaker that the body was embalmed, that it was prepared for shipment by disinfection and in accordance with the laws of this State, and that it was put in an air-tight casket; also a letter from the Health Commissioner that the undertaker was "instructed as to the method to be employed in preparing such bodies for shipment," also letters from the authorities of the railway shipping the body, showing that they had affidavit that the body had been disinfected and that it was in an air-tight case before they received the same for shipment; all of which go to show that there was not the criminal carelessness shown in the transportation of the body, which Dr. Hewitt understood there had been when he wrote that "No better means of distributing this infection could have been devised."

I have written this long statement of facts in the case for your information, and that of your Board, and to save a wearisome repetition will take the liberty of sending it to you through Dr. Hewitt.

Yours,  
J. T. REEVE,  
Secretary State Board of Health of Wisconsin.

To which Dr. Staples replied under date of December 26, 1887, as follows:

DR. HEWITT:

*Dear Doctor*:—Concerning the matter of the transportation of the body of Emma Scherer, dead of Diphtheria, from Milwaukee to this city, and in answer to the communication from Dr. J. T. Reeve, Secretary of the Wisconsin State Board of Health, dated November 24, I have to reply as follows:

"As stated in my first letter to you concerning this case, when, as health officer of Winona, on complaint of citizens, I was called to the case, I found an open casket with the body of the child exposed in a residence in the central part of the city, and with men, women and children gathering around it for the funeral. I found a certificate in the hands of the father of the dead child, who had accompanied the remains here, signed by the officer of the Health Department of Milwaukee, allowing transportation, with the cause of death stated to have been Diphtheria. While the ignorant ones were gathering for the funeral there was a neighborhood excitement outside among those who had heard concerning the cause of death, I saw no evidence that any disinfecting material had been used, and was informed that no metallic or other air-tight case had been used in the transportation. This I know to be true, the affidavit of the Milwaukee undertaker to the contrary notwithstanding. I have since heard that some sawdust was found in the box upon opening it. There was no evidence of any stain from moisture of any kind, either upon the white garments of the body, or upon the white plush covering of the little casket, such as a covering of sawdust saturated with a disinfecting material would have caused. It is clear to my mind, that the matter of the body having been, as the words of the Wisconsin law has it, "incased with an abundance of powerful disinfectants, according to the written or

printed directions of the public health authority, so as to render the same entirely innocuous," exists solely in the affidavit of the Milwaukee undertaker, and was not an actual fact.

I can see, however, as Dr. Reeve shows in his review of the case, how it has been made to appear to the Wisconsin Board of Health by the affidavit of the undertaker, backed by the authoritative statement that the same was competent, and the requirements of the law were fulfilled. When I made the complaint in the case, I did not know what I have since learned, viz: that there was any such loose provision in the Wisconsin law, which practically allows any undertaker to be his own judge, even when there may be pecuniary reasons for, and advantage in doing cheap work, as to what is required to render a body, dead of infectious disease, innocuous when in transportation. I supposed that nothing short of hermetical sealing was lawful, if transportation of such bodies could be allowed at all.

Dr. Reeve notices my error as to the person who signed the permit for transportation. I see that I was in error; that it was the officer of the Health Department of Milwaukee, and not the attending physician, who signed the permit, and that, signed as it was, it seems that the railroad company had a right to take and transport the body.

I have carefully considered all the points in Dr. Reeve's review of the case, as written to me, and I am compelled to admit that, allowing all the affidavits and other evidence from Milwaukee to have been correct, (which we know was not correct,) the body, dead of Diphtheria, was transported from the city of Milwaukee, through the State of Wisconsin, and into the State of Minnesota, and that lawfully, so far as the laws of Wisconsin are concerned, and this notwithstanding the condition of things that were found to exist upon its arrival here. This view of the case seems to have been taken by the Wisconsin State Board at its meeting recently held in LaCrosse, and which was published in the LaCrosse papers.

The body of the child having arrived at Winona, its farther removal within the limits of the city was in violation of law.—Chapter 132, Section 24, Laws of Minnesota, 1883, provides as follows: "No person shall, within the limits of any town, city or village, within this State, without a permit from the Local or State Board of Health, carry or remove from one building to another, or from a vessel to the shore, or from any railway car, any person sick of any contagious disease, or the body of any person having died of contagious disease." No such permit had been obtained or applied for in this case; hence it was that the Health Officer had no knowledge of the case, until it was brought to him at the time and in the manner above stated. The station agents of all railroads running into Winona are aware of this law, and do not allow any dead body to be delivered to any undertaker or other person, unless such person is provided with the necessary certificate from the Health Officer. In the present case, the rule was violated by a subordinate on duty at the C. M. & St. P. station, much to the regret of the station agent, who has always been very particular in these matters. The body was delivered to and conveyed to the residence by a livery driver who was ignorant of the law and custom in these cases.

Fortunately no cases of disease, so far as known, have resulted from this exposure.

The reports made in this case have been made solely in the interest of the public health, and in the discharge of official duty.

Will Dr. Hewitt kindly forward a copy of this communication to Dr. Reeves, Secretary of the Wisconsin Board, as my answer to his letter of November 24th?

I wish to assure Dr. Reeve of my personal regard, and that I believe his investigation and action in this matter have been conscientiously done.

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### SANITARY REPORTS.

WINONA, FRANKLIN STAPLES, M. D., H. O.

During December there were seventy-nine births and twenty-two deaths, and from March 1st, 1887, to December 31st, 1887, there were 616 births against 271 deaths for the same period. During the year 1887, there were reported to the Health Office twenty-six cases of scarlet fever and five cases of diphtheria; while the deaths from scarlet fever were only two, and from diphtheria, five. Of thirty-one deaths from croup, eighteen were reported as membranous croup, and there were two deaths from typhoid fever. The city is justly proud of its mortality record, and rightly credits its healthfulness to its sanitary condition and the purity of its water supply. The City Council has recently decided to enlarge the waterworks and dig another well, following the present system.



## A LAYMAN AS ACTING HEALTH OFFICER.—DIPHTHERIA AT AUDUBON, MINN.

The following is a fair example of efficient work by a layman, who, in the absence of a physician in residence, is compelled to serve as Acting Health Officer. We publish it as an encouragement to others similarly situated:

DR. HEWITT, SECRETARY STATE BOARD OF HEALTH.

*Dear Sir:*—We were so unfortunate as to have a fatal case of diphtheria in this village yesterday, a child of thirteen days old. Being away at the time, I merely heard of it at 9:00 p. m., last night, as Dr. C., of D—, failed to report the case. He had ordered the necessary cleansing and disinfection. This forenoon all the preparation was being made for a public funeral, and persons allowed to visit the corpse or house, when I stopped them and quarantined the house by placing a man there and putting out flags. Interment was made this afternoon. We have another case to-day, a child of four years. Have ordered them to keep all the other children in or near their own house, forbade them going to school; notified school board not to admit them to school, and will try and keep them separate, if possible; if not, will have to station a man there also. What makes the first case worse, is, there is a store owned by the family and they live up stairs; but I think by keeping the people away and over to-morrow (Sunday) and by a thorough disinfecting, by Monday they will be in fair shape. I will keep a man there for a day or two longer. I will keep you posted and will call for aid if I need it from you.

Yours Respectfully,

AUDUBON, Minn., Dec. 17, 1887.

THOS. W. DUNLAP, Health Officer.

To which Secretary replied, thanking him for his prompt action, urging particular care as to the family over store, sending circulars for public distribution. Under date of December 26, 1887. Mr. Dunlap reports:

DR. C. N. HEWITT, SECRETARY STATE BOARD OF HEALTH.

*Dear Sir:*—The second or last case of Diphtheria in this village is getting along nicely. There are no new cases and I think no fear of any farther trouble.

Yours Respectfully, THOS. W. DUNLAP, Health Officer.

## NOTIFICATION OF INFECTIOUS DISEASE BY ATTENDING PHYSICIAN AND ACTION OF TOWNSHIP BOARD OF HEALTH THEREON.

## CORMORANT TOWNSHIP, BECKER COUNTY.

November 17, 1887, Dr. N. Juell, Lake Park, addressed the Board:

TO BOARD OF SUPERVISORS, TOWN OF CORMORANT:

This is to notify you that a case of Diphtheria has occurred in the house of P. B., I have sent the other children out of the house and given directions as to disinfection, please notify Secretary of State Board of Health, Dr Charles N. Hewitt, Red Wing, Minn., and he will give you instructions, if you have not already got them.

Respectfully, N. JUELL, M. D.

Forwarded by the Supervisor of that district as follows:

DR. HEWITT, SECRETARY STATE BOARD OF HEALTH:

*Dear Sir:*—Inclosed find copy of letter received from Dr. N. Juell of Lake Park, Minn. Forward instructions and oblige,

Yours Respectfully,

CORMORANT, Becker County, Minn., November 22, 1887.

L. O. LARSON,

Supervisor of the Town of Cormorant, Becker County, Minn.

On the twenty-fourth he replied: "See that isolation is strictly enforced and disinfection of persons and things, after the disease is ended. I send circulars and copies of the law for distribution, read each carefully to fully understand your duties, and call for any aid which we can give you. Keep me informed of the progress of the disease." To which Chairman replied:

TO SECRETARY STATE BOARD OF HEALTH.

The facts of the matter are that Dr. Juell reported to the Board of Health that Diphtheria was in the house of P. B., we went and ordered none of them to leave outside of their place and no outsider to come to the house except the doctor and we posted up notices to the same effect around the place, and we ordered them to keep sulphur burning on the stove as much as possible. One child died, two more sick, at present, they are doing well.

Yours, JAMES TRACEY, Chairman.

November 30, 1887. Secretary replied: It is not advisable to burn sulphur continuously, as fumes of sufficient strength to have the desired effect could not be breathed. Occasional fumigation with sulphur is sufficient while the

disease exists; but rely, rather, on pure air and sunlight. After the disease has terminated a thorough fumigation, and cleansing of persons and things, as directed in circular.

No more cases.

### VITAL STATISTICS.

**SPECIAL NOTICE.**—All Town Clerks will complete their returns up to March, monthly, as heretofore. If they are not re-elected, or decline to serve further, on receipt of the notice of the organization of the new Town Board, the Secretary will forward a certificate of Births and Deaths returned by the retiring Clerk from January 1st to March 1st, inclusive, to Clerk of Court.

**BEGINNING** with the January returns of Births and Deaths, we must insist that the following simple rules be observed:

1. *Be careful to fill all the spaces in the form.* If you have not been able to obtain all the facts required by law, note the fact.
2. *Fill the space for the name of your Town and your own signature.* A considerable number of reports have been sent back for this correction, others we cannot locate, and must be retained until called for.
3. *Return Still-births under Deaths, not under Births.*
4. *Keep your own record carefully, entering each birth or death as received and make the return to this office correspond, giving it the same number, so that easy reference, in case of doubt, will be possible.*
5. *In all cases of Death, state whether a physician was in attendance, giving name and address, so that the Secretary may correspond with him directly, when necessary, saving you further trouble.*
5. The law does not require the Clerk to make the round of the town monthly, or at any other time. But it is expected that he will take all reasonable steps to inform the people of their duty. This is best done by insisting that physicians and midwives return all Births and Deaths where they are in attendance. It is not a difficult thing to do to know all such practicing in a town, and hold them to their duty. Begin the year by serving copies of the law, and a supply of blanks for returns of Births, Deaths, and Infectious Disease, upon every one of them.
7. *Return all the statistics you have, promptly before the tenth of the following month, so that the Secretary may be able to compile the data as speedily as possible for publication in PUBLIC HEALTH, for the information of all.*
8. *Returns for 1887, not yet sent, must be made on a single form, by themselves, entered in order of months and marked, "Back Returns, 1887."*
9. *Do not put returns for 1887 with those for 1888, as some have already done. All such must be returned for correction.*
10. *Do not mix the months on the same form, but use a blank for each month, both for births and deaths.*
11. *If you have no returns to make, send a postal card notice of the fact, not blank returns, as some have done.*
- 12.—*Forms Nos. 1 and 2 for births and deaths to be retained by the Clerk or Health Officer as vouchers. The copy on forms 3 and 4, only sent to this office.*
13. *Take pains to learn cause of death in young children, as of older persons, and give, any way, name and address of attending physician or midwife.*

### INFECTIOUS DISEASES REPORTED DURING MONTHS OF OCTOBER, NOVEMBER AND DECEMBER.

#### Diphtheria.

#### OF MEN.

	OCTOBER	NOVEMBER	DECEMBER
Cases.....	68	159	81
Deaths.....	12	31	30

*Scarlatina.*

	OCTOBER	NOVEMBER	DECEMBER
Cases.....	20	25	31
Deaths.....		3	2

## OF ANIMALS.

*Glanders*—Remaining, October 1, 1887, 37; November 1, 35; December 1, 54.

	OCTOBER	NOVEMBER	DECEMBER
Reported .....	24	34	22
Killed .....	19	15	12
Released .....	7		
Remaining .....	3	20	13

Remaining January 1, 1888, unaccounted for, 64.

## LABORATORY NOTES.

**I**MPORTANT TO HEALTH OFFICERS, OR OTHERS, WHO SEND SAMPLES OF WATER TO THE LABORATORY, FOR EXAMINATION OR ANALYSIS.—By bearing the following suggestions in mind, you will save time trouble, and expense, to yourselves and the Secretary. He does this work without additional compensation, the State Board paying only the incidental expense of the Laboratory, chemicals, heating, and the like.

*Object of the Examination of Samples of Water.*—To help answer the questions: Is the sample fit for drinking, or other domestic use? If not, why not? and what does it suggest as to the probable impurity; its source; the direction, and method of search for it; and how best to protect the water hereafter?

*Who may Send Samples for Analysis?*—Health Officers, Local Boards of Health, physicians or superintendents, of State institutions, and of water works, the property of the villages or cities to which they furnish a public supply. *Always provided* that the following rules as to collection, history, packing and expressing are complied with, and any question suggested to the Secretary, by the analysis, are promptly answered. (Blank forms and instructions will be sent on application to him at Red Wing.)

*Expense of Analysis.*—To the authorities named above, nothing, except cost of containers, collection, express and correspondence.

*The first essential is absolute cleanliness of the bottle, and cork of the container,* and for this reason it is best to use clear glass bottles, of one-half gallon capacity, with new and good corks. The bottle and cork to be repeatedly washed with the water to be sampled, and when the bottle is filled with the sample to be sent, seal promptly by tying the cork in by a piece of bladder, or with string or wire, sealing with wax. Samples so prepared should be packed in dry sawdust, and expressed immediately. Fill out the descriptive blank carefully, and add any information which you have, throwing any light on the question proposed to be tested by the analysis, send by next mail. Further suggestions will be found on the blanks.

No.'s 11—22, inclusive, in the following table, excepting 14, were from Granite Falls, sent by Health Officer at request of local authorities, and the following is the reply of the Secretary:

DR. F. J. CRESSY, HEALTH OFFICER, GRANITE FALLS:

I have completed (so far as I can without histories of the source of each sample) the analyses of eight samples of water submitted to me, by your Local Authorities, through you. Attached find abstract from my laboratory record. Number eight is not as complete as I wish, as I lost most of the sample before it was finished. Aside from the chlorine, it resembles a rain or distilled water, so far as the analyses goes (no tests for total solids, or hardness.) I must have its history before opinion. The remarkable amount of chlorine in every sample, except numbers one and seven, I am at loss to explain on the evidence of the analyses alone, except by the infiltration of sewage into the source. Numbers two and five are plainly so soiled. Number one and seven are fine waters, except that their sediments indicate the necessity the

cleaning the wells. Algae (a kind of moss) in both. The other wells I should advise to be carefully cleaned and new samples sent after the cleaning. These analyses point very clearly to a possible, and very probable, suspicion of danger, and it is the plain duty of your Board, and authorities, to make further survey and examination. Other analyses will throw much more light on the subject, and when spring opens I shall be glad to look the ground over with you and the Council, should you wish it, and make any suggestions which occur to me.—H.

## WATER ANALYSES

This record includes most of the analyses of water for the last three months. All of the descriptions have not been received, so that only the most evident conclusions have been given below. The enormous amount of chlorine in most of the Granite Falls waters examined, is to be further studied. A thorough analyses of their water supply must be made in the spring.

*Analyses:—Results expressed in parts per 100,000. Multiplied by 0.584 gives grains per American gallon.*

	SOLIDS.		Nitrites	Nitrates	Chlorine	Oxygen used by Org. Matter	AMMONIA	
	Total	Volatile.					Free	Alt'd
1—{ Albert Lea, Dr. Wilcox, H. O. .... }	.....	.....	.....	marked	11.	.....	.015	.125
2—{ Northfield, West side school supply }	138.	sl'g't	slight	.....	.697	.....	.0015	.008
3—Northfield high school .....	57.	.....	marked	.....	1.694	.078	.0007	.0013
4—{ Northfield, St Olaf's college. .... }	.....	.....	slight	.....	.4	.0502	.0005	.0025
5—{ Sleepy Eye Suspected well .....	80.	.....	very marked	.....	2.	.6581	.0011	.025
6—{ Waseca, Well No. 1, School gr'nds }	.....	.....	very marked	.....	2.8	.1218	.0005	.0015
7—{ Waseca, Well No. 2, School gr'nds }	60.	.....	slight trace	.....	.8	.607	.053	.005
8—{ Owatonna, No. 1, State pub. school. }	41.	.....	slight	.....	.4	.0366	.0135	.001
9—{ Owatonna, No. 2, State pub. school. }	.....	.....	trace	.....	.40	.312	.001	.006
10—{ Mapleton, Well, typhoid fever. .... }	.....	.....	trace	.....	7.2	.2681	.0018	.0035
11—{ Granite Falls, Well No. 1, typhoid fever }	.....	.....	trace	.....	26.0	.19012	.006	.0112
12—Granite Falls, No. 2.....	.....	.....	0	.....	37.0	.2588	.001	.015
13—Granite Falls, No. 3.....	.....	.....	.....	.....	28.	.5606	.003	.0395
14—Granite Falls, Dr. Stratton .....	.....	.....	.....	.....	21.0	.7168	.006	.84
15—{ Granite Falls, (2d series) Well No. 1, school. .... }	.....	.....	.....	.....	.80	.0975	.006	.007
16—Granite Falls, No. 2.....	.....	.....	.....	.....	16.5	.8952	.0075	.031
17—Granite Falls, No. 3.....	.....	.....	.....	.....	8.5	.....	.0031	.0081
18—Granite Falls, No. 4.....	.....	.....	.....	.....	7.0	.....	.001	.0095
19—{ Granite Falls, Public spring, No. 5. .... }	.....	.....	.....	.....	20.0	.12312	.0065	.011
20—Granite Falls, No. 6.....	.....	.....	.....	.....	16.0	.1235	.005	.0095
21—Granite Falls, No. 7.....	.....	.....	.....	.....	.5	.034	.0041	.0045
22—Granite Falls, No. 8.....	.....	.....	.....	.....	7.5	.0985	.0005	.0025
23—{ Clearwater, Well, Dr. Hubbell, H. O. }	.....	.....	0	.....	.5	.1317	.0065	.0095

- 1—Bad every way.
- 2—Good water.
- 3—Look out for sewage pollution.
- 4—Fine water.
- 5—A foul water; suspect excreta.
- 6—Suspicious; examine before further use.
- 7—Likely surface water gets in.
- 8—Likely surface water gets in.
- 9—Likely surface water gets in.
- 10—Chlorine suspicious; should cleanse and examine.
- 11—A very foul water; probable human excreta.
- 12—Worse still.

- 13—Worse still.
- 14—Very bad.
- 15—A good water.
- 16—A foul water.
- 17—Chlorine only justifies suspicion.
- 18—Chlorine only justifies suspicion.
- 19—Bad record; not fit to use.
- 20—Bad record; not fit to use.
- 21—A good water.
- 22—Chlorine large; other record good; must have description of well before opinion.
- 23—Perhaps surface water gets in; better see; good water.



# PUBLIC HEALTH IN MINNESOTA.

—THE—

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WHOLE NO. 35

## SMALL POX.

TEN years ago a case of Small Pox appearing in a populous boarding-house, in Minneapolis, as one did recently, (see report under infectious diseases of men), or the danger which threatens from California, would have afforded just occasions for alarm. To-day the effect is only increased vigilance, and readiness to meet possible danger, which effectually disarms them of the old time terror, or panic.

We owe this favorable condition of things to our thorough sanitary organization, which unites the authority of the State with that of the smallest village or township, creating common interest, common responsibility, and united effort.

*With such opportunities comes increased responsibility, under the conditions which we proceed to discuss:*

As usual, at this season, Small Pox is on the increase all over the country. From January 1st to February 22d, we have official notice that the disease has occurred in Minnesota, Iowa, Pennsylvania, Ohio, Tennessee, Louisiana, and California. We have reason to believe it to be in Brooklyn, N. Y., and probably in other places. In all the States, except New York and California, there was but a single case at the date of report. We have no reliable returns as yet from New York; but are in direct communication with the State Board of California, and the following statement is official: Small Pox was imported into that city about five months ago from China. It is now epidemic in San Francisco, and is slowly spreading to other parts of the State.\* It appears that there is no efficient quarantine service in the harbor of San Francisco, through the lack of the necessary State leg-

\* "Small Pox continues to spread very slowly. Two hundred and twenty-four cases were reported during the month in San Francisco. Thirty of these were Chinese. Three cases were reported in Sierra Valley. Several cases occurred in Sierra City, but there the disease has been checked. Two were reported near Downieville, and two at North Bloomfield. In Los Angeles ten cases were reported, eight in Stockton, and eleven in San Jose. Dunsmuir had two or three cases, two were reported in Red Bluff, two in Redding, one in Delta, two in Sacramento, and one each in Castroville, Santa Rosa, Cloverdale, Santa Barbara, Yuba City, Riverside, Chico, three in Tulare, and eight in Martinez. Of the two cases in Redding, Dr. Miller, of that place, writes that one of them was contracted through a dog carrying the infection in his hair to the child, who lived a quarter of a mile from the place where the first patient was quarantined. In Berkeley, of the two cases, one was traced by Dr. Payne, the Health Officer, to Oakland, where the disease was contracted in handling washing from the steamer Gaelic. With so many centers, from which to radiate, Small Pox cannot fail to reach, in time, every portion of the State, if preventive measures are not at once adopted to stay the pestilence."

isolation, and appropriation. The Secretary of the State Board writes that without such provision, there is constant danger of fresh importation of the disease, and little probability of its entire extinction. There will be, we trust, a united effort, by other State Boards of Health, to assist the California Board to obtain the necessary powers, because that control is not merely in the interest of California, but of all the other States as well. As respects our own State, we are immediately and directly concerned, and for the following reasons: For health, pleasure, or for business, a large number of our people, of all sorts and conditions, go to California in the late fall or winter, remaining till spring. That emigration was, probably larger than ever last year, and the number returning this, and the succeeding three months, will be up to the average. It would be difficult to name the ones most likely, if any, to bring the contagion back with them. Still it is not at all unlikely that some one may be so unfortunate as to do so. What happened a few days ago in Iowa might as well have happened in Minnesota.

January 28th, a farmer returning to Iowa from an excursion to California, reached his home, sick with Small Pox in the confluent stage. Fortunately the disease was immediately recognized by the local authorities, the State Board notified and every possible precaution taken to prevent a further spread.

In view of the facts above related, we call the attention of Health Officers, and Local Boards of Health, to the need of a constant remembrance of our danger from the same source. The precautions to take are, of course, to keep a lookout for those who return from California, and of any sickness which they may have, or which may occur in their families. This is best done by notifying physicians of the danger, and asking their co-operation. It can be done quietly, and efficiently. Meantime the Secretary of this Board has notified the managers of all the railroads, who bring passengers from California, of the danger, and received assurances of prompt notification, should there be occasion therefor.

The inspection, in California, of passengers coming this way is as follows: "We have medical inspectors stationed at Santa Barbara, San Pedro, San Diego, and Tulare to watch all trains and steamers leaving San Francisco; we have also an inspector at Truckee who inspects all trains." Should it seem necessary, the same rule will be enforced here. Local authorities will notify the Secretary by telegraph, of any suspected cases, writing full details, by next mail.

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#### VACCINATION.

IT is a misfortune, but still a fact, that both the physician and his clients neglect the vaccination of children till the danger of Small Pox brings them to a sense of their duty. This is not the invariable rule, but the exceptions are only enough to prove its

general truth. As to the re-vaccination of adults, it may be said to be invariably true.

One of the obstacles is the usual absence of a reliable vaccine at other times. We are frequently in receipt of inquiries as to the proper kind, and where to obtain it, and unless we know where fresh humanized virus can be secured, we are usually at a loss what to reply. If our readers will take the trouble to read our editorial on the subject, with the articles by Dr. Hand, President, and Dr. Senkler, an old member of this Board, now of St. Paul, (Vol. I., pp. 63 and 73,) they will find a resume of the argument for humanized virus, up to that date, based largely on our experience in Minnesota, and so far as the Secretary is concerned, repeated and vigorous fight with epidemic Small Pox. Without going into argument as to the relative value of humanized or bovine virus, our advice is, under existing circumstances, to obtain the best procurable sample of bovine virus *direct from reliable producers, on ivory points, warranted fresh, dry, and free from blood.* Every item we have italicised is essential to the virus. This obtained, use it on a healthy infant, and if the eighth day pock is free, or almost free from areola, answering to Jenner's description, "a section of a pearl on a rose-leaf," and the fluid, (which exudes on the least possible puncture by a fine cambric needle,) is as clear as a diamond, you have a virus which you can swear by. Collect it on clean, new quill-points, dry as rapidly as possible, (but with very gentle heat,) put in a clean, dry, dram vial, cork well and, if not to be used immediately, which is surest and best, then lay aside in dark, cool place till needed. How long this form of virus will retain its efficiency we do not know, but we do know that the sooner it is used the surer its operation. We have repeatedly secured fifty such points from the cells of a single perfect vesicle. No pressure should be used, only that virus taken which exudes from the little puncture unassisted. After the virus as above has been taken, a few minutes suffices to glaze over the little punctures by the rapidly drying exudate which remains on the surface around them.

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#### WINTER CHOLERA.

THERE is prevailing in Minneapolis, at the present time, an affection not unlike the cholera morbus of the summer months. It affects all classes, chiefly adults, and has proven fatal in several cases. By the courtesy of the Health Officer of Minneapolis, we were present at the autopsy of two of the victims, a man and a woman. In both the only abnormal condition present was localized congestion of portions of the small intestines. In neither had it gone to necrosis of the mucous membrane, nor was there any marked change in the glands of the intestinal track. We looked particularly to Peyer's patches, but found nothing. There were, perhaps, twenty physicians present and there was a free exchange of opinion as to the character, and probable cause of

the malady, but very little agreement, as to either. We understand it to be the common opinion that a careful study ought to be made of the history of the outbreak in all its aspects, causation, symptoms, pathology, prevention, and treatment. So far as the causation and prevention are concerned, from a sanitary standpoint, plans are being arranged whereby the State Board will assist the Local Board in the investigation, of which more hereafter.

Meantime it is desirable to know when and where this disease has appeared outside of Minneapolis. Health Officers and physicians, to whom this number is sent, will find in the extra sheet a series of questions which indicate the points upon which information is asked. Individual experience will, of course, vary so that it is impossible to do more in such a paper than to suggest the outlines of inquiry, relying, as we do with confidence, on the co-operation of our professional brethren in a matter of so much general interest.

Will all who receive this number answer the inquiries immediately, on the extra sheet or otherwise, as they please. *If you have seen no case, send a postal card to that effect.*

Please avoid confounding this affection with the sporadic cholera morbus, not unusual at this time of the year.

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#### ONE HUNDRED AND FIFTY-FOUR CASES OF CONTINUED FEVER OF A TYPHOID CHARACTER IN MINNEAPOLIS, IN 1887.

DR. J. H. DUNN, PHYSICIAN TO CITY HOSPITAL, MINNEAPOLIS.

REFERRING to Prof. Brouardel's paper on Typhoid Fever, in a conversation with Dr. Dunn, city physician of Minneapolis, he gave us an extract from a paper on "Some more points on continued fevers of a typhoid character," which, as giving the experience of a good observer, in one of our largest cities, and one which has paid heavy tribute to this disease, are interesting. As City Physician, he has had a good opportunity to form a judgment as to some of the puzzling questions of this protean disease. The Doctor writes:

"From May 1 to November 1, 154 cases of continued fever of a typhoid character, exclusive of secondary or symptomatic pyrexia, have fallen under my observation, distributed as follows throughout the six months:

May, 7; June, 11; July, 17; August, 38; September, 48; October, 33. Total, 154. Died, 27—18 per cent."

The cases came from nearly every quarter of the city. Servants from the most aristocratic neighborhoods, the poor from outskirts, laborers in lodging and boarding houses, tramps from various parts of this and other states, and particularly from Dakota. Thirteen private cases in resident individuals of various ranks in life, merchants clerks and skilled laborers, housewives, etc. All these cases were diagnosed Typhoid Fever. The duration of illness has been very varied; the shortest non-fatal case was two weeks to complete defervescence, the longest about ten weeks, due to relapse of complication. The average has been about thirty days.

These 154 cases were all in young adults, between twenty and twenty-four years of age, excepting two only in children, aged respectively twelve and fourteen. It was particularly noted that a very large percentage, probably considerably more than two-thirds of the patients had recently changed either their habits of life or their location, many being Scandinavians but a short time in this country or this city, or laboring men and women recently come to the city,



whose methods of living had been radically modified within a few weeks or months. In a number of instances from two to five cases occurred in one house or family. Investigation in such cases showed in each instance that the water supply was derived from wells. In one instance in which four young people were attacked, the well—water from which was declared to be excellent—was found to be within fifteen feet of a row of eight privies and two cesspools, and within a radius of one hundred and fifty feet were several more privies and cess-pools, barns and dirty back yards, the well being located near the centre of a block about which was cluttered a really phenomenal amount of filth.

While a marked preponderance of these cases came from districts using well-water, and many other cases drinking city water at the time of the attack, had from three to six weeks before been drinking well-water in localities from which they came, yet, in a considerable number of instances, the source of infection must be looked for outside of the water supply. In a great majority of these cases the air of the squalid lodging or work-shops of the patients was very suspicious. They were often reeking with malodors from urinals and water closets in close proximity to sleeping apartments. Of servant girls attacked by the fever, some came from boarding houses in which other cases of fever developed, but it was particularly noteworthy that in the instances of servants from private houses in the better parts of the city, no cases occurred in the families from which they came, which I suspect shows an immunity of the family from long residence and gradual exposure to the infectious material, while the servants were comparatively recent arrivals and suddenly exposed to the poison under the favorable condition of changed mode of living.

In some instances any suspicious source of infection could not be discovered. In country practice I have observed many cases in which the most diligent search for a probable source of the disease was totally futile, but I also observed an epidemic of small pox which began in a German family twenty miles distant from a railroad. The patient had not been off the farm in six months, no member of the family had been off the premises in several weeks. It was alleged that the family had not been visited except by neighbors, who, during the busy season, were all kept close at home, and no mail had reached the farm house except a letter or two during the summer, several weeks before the attack. How the contagion of variola got there was past the ken of the most diligent research, yet it is not probable that it sprang up *de novo*.

Three cases have fallen under my observation in which the disease appeared to be propagated by direct contagion, one of which it will be sufficient to relate.

Miss T., having contracted Typhoid Fever in St. Paul, was shipped to her home on a farm in Scott county and died four days after her arrival. There had been no enteric fever at this farm or in this neighborhood. A brother, twenty-two years of age, who was much in the room with her, was taken with the disease three weeks after her arrival from St. Paul, and three weeks later also died. The discharges from the bowels had been disinfected and deposited at a safe distance from the house and its appointments. The other instances were of a similar character. Such examples of suspected direct contagion may, of course, be only apparent, yet it does not do to be dogmatic in the presence of disease. Basing nothing upon these three cases, but resting upon the evidence of the recent and older literature of the subject, it seems to me by no means proven that enteric fever may not exceptionally be transmitted by direct contagion under certain circumstances. Unquestionably such an event is exceedingly rare. In my observation in Minnesota, a dry summer followed by a wet fall is most favorable to wide spread and severe epidemics of Typhoid Fever."

#### THE DRINKING WATER OF VIENNA AND TYPHOID FEVER.

THE following is an abstract of an elaborate article in the *Revue d'Hygiene* for January, 1888, upon the relations of water supply to the causation of Typhoid Fever in the capital city of Austria. It is the evidence adduced, rather than the argument or conclusions of the author, which we have summarized, and we submit that it is too striking and direct, to be explained by coincidence, or accident.

The great question of the relation of disease to water supply is pressing for a settled policy on the part of Local and State Boards of Health, but our experience is too recent and our centres of population too new, for positive demonstration. Not so of the great centres of the old world. There all the conditions of the problem are present, and if Vienna had deliberately arranged a series of experiments, to last for centuries, only to reach a tangible conclusion now, she could not have contrived so well, as has happened in her inevitable experience. The present paper deals directly with the statistics of Typhoid Fever for the last thirty-five years (1851-86), and incidentally with dysentery and cholera; these diseases standing, by common consent, in very intimate relation with the environment of those who suffer most from them.—H.

"Among the diseases constantly endemic, in great centres, liable, at any time, to become epidemic, dysentery has caused, in Vienna, an average mortality of 70 per annum. Noting the fact that pure water was introduced in 1873, the following is submitted.

#### MORTALITY BY DYSENTERY IN VIENNA.

In 1867, 97; 1868, 83; 1869, 107; 1870, 104; 1871, 105; 1872, 38; 1873, 53; 1874, 32; 1875, 32; 1876, 20; 1877, 17; 1878, 17; 1879, 21; 1880, 11; 1881, 0; 1882, 0; 1883, 0; 1884, 0; 1885, 0; 1886, 0.

Since 1874, the mortality from dysentery has constantly and progressively decreased, and since 1881 not a case has been reported.

As for Typhoid Fever, the following table gives the mortality, per 1,000 of population for 35 years:

In 1851, 200; 1852, 220; 1854, 210-70; 1855, 330; 1856, 320; 1857, 230; 1858, 230; 1859, 140; 1860, 120; 1861, 140; 1862, 150; 1863, 100-120; 1864, 70-100; 1865, 100-125; 1866, 120; 1867, 90-100; 1868, 100-115; 1869, 110; 1870, 100 90-120; 1871, 140 185-140; 1872, 140-115; 1873, 115-80; 1874, 80 55-65; 1875, 60 75-80; 1876, 59 45-49; 1877, 45 50-39; 1878, 29-25; 1879, 25-23; 1880, 23-21; 1881, 21-20; 1882, 21-20; 1883, 21-13; 1884, 13 9-11; 1885, 10 15-10; 1886, 9.

From which it appears that, from 1851 to 1881, the mortality was about 20 per cent of the inhabitants, the disease was epidemic in 1855-56 (mortality about 30 per cent), and came down to its usual prevalence during the next two years. In 1859, coincident with the repair of the old sewer-system, by replacing defective pipes with new and deeper ones, to exclude sewage from the wells, the average mortality fell to 1.20 per cent.

Spring water was furnished to the city in October, 1874, and in November and December following, the rate of mortality fell to 0.58 per cent. Furthermore, since the introduction of spring water, the number of dead from Typhoid Fever has steadily diminished till, for the last three years, it has fallen to about 0.11 per cent. So that now, as Prof. Nothnagel expressed it, "The disease is such a rarity, since we have had the spring water, (*eau de source*), that when by chance a case does offer at the hospital, I show it to the students as of unusual interest. I should add that the large proportion of cases of this disease come from outside the city." These are the conclusions of the statistics and the evidence of the hospital experience. Is it possible to explain them than by the conclusion that Typhoid Fever has disappeared as a cause of death in Vienna as a consequence, chiefly, of the substitution of a pure water for one poisoned by the excreta of the population?

#### INFECTIOUS DISEASES OF MEN.

##### SMALL POX IN MINNEAPOLIS.

THE following excerpts from report sufficiently describe the case. The patient died in pest house, of confluent Small Pox. After proper disinfection, the house was opened, and the persons detained released. No new cases, nor any clue to the origin of the first one:

MINNEAPOLIS, Minn., January 24, 1888.

DR. HEWITT, SECRETARY STATE BOARD OF HEALTH:

Dear Sir:—I wish to report to you the following case of Small Pox. Henry Ryan, aged twenty-one years; born in Wabasha, Minn.; he lived there until

last spring; went to Dubuque, Iowa, and worked there six months on a high bridge. He returned to Wabasha seven weeks ago and remained there one month and came to Minneapolis three weeks ago. He has always enjoyed good health, gives a good family history, and states that he has not been exposed, to his knowledge, and has heard nothing of Small Pox existing in any locality where he has lived, and can not imagine where he contracted the disease.

The facts of the case are as follows: After his arrival here he purchased a pair of corduroy pants, from a second-hand store, and wore them at his work in preparing to build the bridge in our city. He was taken sick Wednesday or Thursday of last week, with pains in his back, headache and some little stomach trouble. The pains in his back increased and seemed to effect his loins in general. Headache increased with some diarrhea. Dr. Linn, of our city, was consulted on Thursday and diagnosed the trouble a bad cold. He left word that if he felt any worse, after taking his medicine, that Ryan should notify him. On Saturday afternoon, the doctor was called again, and it was evening before he arrived. He found a suspicious eruption and immediately reported the matter to me. I called upon Dr. Freeman and asked him to accompany me, and upon our examination, we found a well developed case of semi-confluent Small Pox in the papular stage. Without saying a word to anyone, I slipped out the back door and telephoned for two policemen and watched the building until they arrived. I placed one at the front door and one at the back door, and then went in and informed the occupants of the house what I had discovered and also informed them that the house was under quarantine, and that they must, at once, submit to the rules and regulations adopted by the Board of Health, for the preservation of the public health, and that therefore they must submit to a thorough vaccination.

Dr. Freeman and myself had every one summoned into a large room in the house and we vaccinated in that building twenty-eight persons, whose names we took as we vaccinated them. I then began to make inquiries as to who had been exposed for the last three days, either directly or indirectly, and discovered that one Thomas Scullen living somewhere in East Minneapolis, and other roomers, had been exposed, together with Arthur Wagner and George Stewart, who were not in the house at that time. After finding that George Stewart and Arthur Wagner had left the city, I proceeded at once to the Milwaukee depot and telegraphed you. Dr. Freeman and I then started out and found those who had been exposed, and before eight o'clock in the morning we had vaccinated everyone who had been exposed, either directly or indirectly, within three days, excepting the two named out of the city, and had quarantined them. The patient was sent to the pest-house, and a physician detailed to take charge of him and not allowed to continue any general practice. This, the Board thought, would be judicious under the existing circumstances. We also deemed it wise, as this was in a thickly populated section of our city, made up of a large part of cheap boarding-houses, to vaccinate all persons in the adjoining buildings.

\* \* \* \* \*

We vaccinated every man, woman and child in the block, making a total up to twelve o'clock yesterday of over 400 persons. I have detailed a watch over both houses that is relieved every eight hours, so that it is impossible for persons to leave or enter the house without our knowledge. \* \* \* \* \*

There is no question but what we have a well defined case of confluent Small Pox at the present time to deal with a hemorrhagic tendency. Hoping that you have been successful in overtaking of the missing ones, I remain,

Respectfully yours,

S. S. KILVINGTON, M. D.,

President Board of Health.

#### ARRANGEMENT WITH RAILROADS AS TO SMALL POX.

Dear Sirs:—Your attention is called to the following from Secretary State Board of Health, California: "*Small Pox in San Francisco in an epidemic form, and sporadic cases are scattered throughout the State.*"

Will you, therefore, immediately call the attention of your conductors, and those of the sleeping cars, bringing California passengers this way, to the neces-



sity for careful supervision of all cases of sickness, particularly of eruptive disease in such passengers coming to Minnesota.

Please instruct them to notify me at Red Wing, by railroad telegraph, of any such cases, actual or reported, before arrival in State, if possible, that I may instruct Local Health Officers to inspect and report, and save you unnecessary delay or trouble. Please understand that it is *safety* which we require, and that we will co-operate to prevent useless alarm, or suspicion and delay if you will aid us as above requested. Make the rule, in case of doubt, to consult the nearest railroad physician, outside Minnesota, and if in that State, notify Dr. Hewitt, by telegraph, at Red Wing.

An early reply is asked, that we may know the co-operation we may expect.

Yours Respectfully,

CHARLES N. HEWITT, M. D.,  
Secretary State Board of Health.

TO MANAGERS OF RAILROADS IN MINNESOTA.

NORTHERN PACIFIC RAILROAD CO. }  
OFFICE OF VICE-PRESIDENT AND GENERAL MANAGER, }  
ST. PAUL, MINN., February 6th, 1888. }

Dear Sir:—I beg to acknowledge yours of 3d inst., with the assurance that the matter referred to shall have immediate attention. Yours Truly,

DR. HEWITT.

T. F. OAKES.

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY. }  
GENERAL MANAGER'S OFFICE, }  
MILWAUKEE, Feb. 6th, 1888. }

Dear Sir:—I have your favor of the 3d inst., and have referred the same to our General Superintendent, with instructions to see that the means of protection suggested by you are carefully complied with. You may be assured of our full co-operation in this and other matters of this kind. Copy of instructions to conductors will be sent you. Yours Truly,

DR. HEWITT.

ROSSELL MILLER, Gen'l Manager.

MINNEAPOLIS & ST. LOUIS RAILWAY. }  
OFFICE OF THE PRESIDENT, }  
MINNEAPOLIS, MINN., Feb. 23, 1888. }

Dear Sir:—I am in receipt of yours of the 17th inst., with regard to instructing our train and sleeping car conductors in the matter of making careful inquiry and reporting any case of eruptive disease among passengers on their trains or cars coming into Minnesota, the same being necessary to prevent the introduction of small pox into this State from San Francisco, where it is reported to be an epidemic. I have instructed our Superintendent, T. E. Clarke, to issue the necessary instructions as suggested by you, and to have our conductors report to him and he will in turn advise you of any case which he may possibly have. I note particularly your remarks to the effect that it is *safety only* which you desire to promote, and that you will co-operate to prevent useless alarm or suspicion and delay to passengers if we will co-operate with you as you desire. Very Truly,

DR. HEWITT.

W. H. TRUESDALE, President.

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JANUARY,  
DISEASES OF MEN.

Diphtheria.....	{ cases, 37
	{ deaths, 17
Scarlatina.....	{ cases, 10
	{ deaths, 2

DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	64
Reported during the month.....	18
Killed.....	10
Released.....	5

Remaining February 1st isolated or not accounted for..... 67



## WINTER CHOLERA.

*To Health Officers and Physicians:*

The following questions indicate the character of the information desired. An early reply will enable us to condense the facts for the next number of PUBLIC HEALTH. C. N. H.

Assuming that you have had cases of this disease in your practice,

1. When did the first case appear?
2. Was the patient away from home within two weeks, or shorter period of the attack, where and when?
3. What were the first indications of sickness, their duration, and the succeeding symptoms, till the termination of the case?
4. Any other cases in the same family? Describe.
5. What relation did you find to exist between the disease, in any case, and the sanitary surroundings?
6. How many cases have you had, sex, age, condition?
7. Average duration of the attack, and proportion of relapses, if any?
8. Number of fatal cases with any details, including post mortem?
9. Take your experience as a whole, state your conclusions as to etiology and the means most likely to prevent or control the disease?



# PUBLIC HEALTH IN MINNESOTA.

—THE—

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH.

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

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*FEBRUARY, 1888.*

*WHOLE NO. 36.*

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WITH this number of PUBLIC HEALTH IN MINNESOTA we end the third volume and with the next number begin the fourth year of its publication. It is the pioneer of its class, which now includes an increasing number of publications having something like common aims and methods. Ours grew out of the necessities of the work of public health in Minnesota, and has taken the direction, which that work indicated.

Three years ago these were the facts in Minnesota; there were in the State more than 1,000 Local Boards of Health, of which more than 800 were Township organizations, whose members are farmers, as a rule. More than 200 other Boards served villages, boroughs and cities. To them was committed by the law, the prevention and control of infectious diseases of men and animals; the control of offensive trades; and the supervision of all influences injurious to the public health of the locality which each Board served. They had already learned, by experience, most of them, that neither health or disease were to be limited, or controlled within the bounds of towns alone, but that for successful work the Local Boards were closely related to each other and to the State Board. We had also learned that the State Board, beside its own special work, must also serve as a bureau of information and advice for the Local Boards. This duty had, up to the time mentioned, been done by the correspondence of the Secretary and the distribution of copies of the laws and circular letters and tracts upon special diseases. But now the correspondence had become very voluminous by reason, largely, of necessary repetitions, and circular letters and tracts, with the bi-ennial report of the State Board, did not supply the lack. Furthermore, the work of organizing Local Boards, and increasing their efficiency was not yet what it ought to be. Out of these and other needs, this publication came.

It is common experience that it has done good service; we should find it difficult to get along without it. That it is not all it might be, none know better than ourselves. We begin the fourth year with the intention to increase its usefulness in every practicable way, and we rely upon the active assistance of Health Officers, and the other members of Local Boards, to that end.

THE MONTHLY ABSTRACT OF THE RETURNS OF BIRTHS AND DEATHS, which we begin with this number, for January, 1888, will be a regular feature hereafter, made possible by the monthly reports of Health Officers and Clerks.

The form of the tables is experimental, and will be changed in any way, found on trial, to give better exhibit of the facts.

Nineteen hundred and seventy-one Births were reported in January, 1888, of which the table gives details.

Nine hundred and ninety-eight deaths are reported for January, 1888. The data of the principal diseases will be found in the table in a shape for study and comparison. Of infectious diseases,

*Diphtheria* leads in mortality having caused nearly 11 per cent of total deaths. Fourteen of this number were reported as Croup, but most of them were in the immediate neighborhood of *Diphtheria*, diagnosed by reliable physicians, and have therefore been classed with it. The monthly returns of deaths enable the Secretary to discover where infectious disease exists unreported, and to take measures promptly for its investigation and control. For example but fourteen localities had reported the presence of this disease before sending the return of deaths (largely on account of interrupted mails), and to each not reporting an inquiry was immediately sent, with proffer of assistance if needed, and request for report. Another advantage is the power to notify adjacent Boards of the neighborhood, and character of infectious disease, and so to forestall an attack. This we have repeatedly done.

*Diphtheria* was reported in forty-nine towns in thirty-five counties. *Scarlatina* had a very limited prevalence and mortality, seven towns in seven counties and but eleven deaths. Measles has been wide spread and rarely fatal. Diarrhoeal diseases, though of more than usual prevalence, have occasioned slight mortality.

Of non-infectious diseases, those of the lungs have been general and fatal. *Pneumonia* caused eighty deaths in thirty-one towns in twenty-six counties. A noteworthy feature of its record is the distribution of the mortality from infancy to over eighty. Old age (over seventy) accounts for seventy-eight deaths, the immediate cause of which, in but a single instance, is attributed to lung disease. Several Health Officers reported an increasing prevalence of *Pneumonia*, of which we may find the results in next month's mortality. The infant mortality (under five) is worthy of attention. It is 38.4 per cent of all deaths for the month, and the table will enable the reader to trace each individual cause of death, and for each year of age. Taken altogether, this table is our best argument for the monthly return of Deaths, of which some of the Town Clerks have complained as, in their opinion, useless.

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TOWNSHIP BOARDS OF HEALTH.—In the review of the work of 1887, there is no more encouraging fact than the increased efficiency and zeal of these Boards. We could easily fill a whole



number of PUBLIC HEALTH with the evidence of it. Despite the annual change in their membership, there always remains the disposition to avail themselves of the advantages which a Local Board of Health affords to the town. The Township Clerks, by a large majority of their number, have co-operated in the common labor. All are learning the great lesson which is taught by their every-day experience as sanitarians, that to prevent disease is better than to cure it; that while the work of the skilled physician in the care and cure of the sick will never cease, his first ambition is to prevent its occurrence at all, and that to that end the father or mother of a family, in the home, and the Local Board of Health for the town, are essential co-laborers. In numerous instances during the year past these Boards of Health with no other professional advice than we could give by correspondence, have by resolute enforcement of the laws, and the exercise of tact and good judgment, stopped the spread of infectious disease, notably diphtheria, and crushed out the infection. They have saved the lives of little children oftener than of adults, because little children, and young adults, are the favorite victims of our common infectious diseases. The knowledge that they have done this is a reward in itself whose value none can measure. The money saving secured by successful sanitary work is becoming evident, even to those who seem incapable of getting any higher idea of it, and it will be wise for Township Boards to use this argument with objectors, when the lives saved, suffering averted, and disease prevented, make no impression.

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**SANITARY COUNCIL AT ROCHESTER.**—It is proposed to call a meeting of the Local Boards of Health of southern Minnesota at Rochester in May. The details are not yet arranged, but will include every feature of interest which can be made available. Full particulars will be given in the next number, and in circulars, to be sent out in ample time to give all interested abundant opportunity to arrange to be present, and bring something to add to the interest of the gathering. The peculiarity of these conferences, is that the membership being largely of men who have to enforce the sanitary code of the State, their discussions are constantly influenced by their responsibilities, and are not so "scattering" and do not conclude with formal "resolutions," so frequently as the average popular meeting. There is as little of formality in the organization of the Council as possible, all available time being given to the practical questions of every day concern to the members of Boards of Health. Some time will be taken for the presentation of the new, or curious discoveries in sanitary matters, many of which give brilliant promise of new helps for our work in the near future. We promise a good and profitable meeting and rely upon Local Boards to begin now, arrangements for as large a representation as possible.

## NORWEGIAN LEPROSY.

WE submit to our readers herewith, an authoritative statement as to contagiousness of this disease, by a physician, Dr. Hansen, who has devoted the whole of his professional life to its study. He is in charge of the Leper Hospital in Bergen, Norway, and it is a part of his duty to visit the Lepers in their homes. He has thus had abundant opportunity to know the truth with respect to this disease. The frank and clear statements of his letter, taken with the history of the disease in Minnesota, by Dr. Gronvold, will enable all interested to judge for themselves of the danger to be feared from it. The Doctor comes to our State to study the influence of emigration upon the descendants of Lepers, as aiding to a better knowledge of the disease, and to gather any other facts of its history here, which he can find. We bespeak for him any aid which Health Officers, Physicians, and Local Boards of Health can give, to help him secure the information which he seeks.

DR. CHARLES N. HEWITT.

LEPROSY is in Norway, as you well know, a very common disease, though in later years diminishing considerably. Our statistics show for the year 1856, more than 2800 lepers, and at the end of 1885, only about 1100.

From a practical point of view, as well as from a scientific one, it is of the greatest interest to know if the disease be a hereditary one or not.

From the year 1868, I have constantly and assiduously studied the disease, being appointed in the special medical service for leprosy in my country. From my studies of the disease I have got the conviction that leprosy is a germ disease communicable by contamination or contagion, and not hereditary. When I say contagion, I do not mean to say that the disease is contagious in the same way as measles or scarlatina, or contagious by distance, but only by very intimate contact, probably by inoculation, though I cannot say anything positively on this point. But after our experience in Norway there is no danger in living in the same house with a leper, if one does not lay in the same bed with him, or does not use the same spoon, knife or fork as the leper. So the danger of contagion is not very great, and it is, in my opinion, only the peculiar mode of intercourse between the peasants of Norway which makes the disease prevail amongst them.

As the disease has reigned in Norway for centuries, it is absolutely impossible to exclude the possibility of inheritance in any case, and in consequence hereof the question of contagion or heredity is still subjudice, and therefore I have come over to America in the hopes that the question could be settled here.

Not less than fifty-two leperous Norwegians have to my knowledge emigrated to America, partly in the hopes that the disease should be cured here, and most of them, if not all, have probably settled in this part of the country. Further, hundreds or thousands of the Norwegian immigrants must be the offspring of lepers, or have leperous kindred in Norway. If all these had remained at home, there can be no doubt that many of them would have become leperous, and if it could now be positively ascertained, that none of them have caught the disease here in America, this would, in my opinion, clearly show that the disease is not hereditary in America, and if that be the case, the disease will not be hereditary anywhere else.

In the hopes that you will fully acknowledge the interest of the question, I take the liberty to ask you to assist me in finding out the dwelling places of the immigrated leperous, and, if possible, also of Norwegian immigrants who descend from lepers in Norway.

You will do me, and I hope science too, a great service in assisting me in my researches.

Yours truly,

G. ARMAUER HANSEN, M. D.

VITAL STATISTICS OF MINNESOTA.—Under this heading we shall publish, regularly hereafter, a monthly abstract of the returns of Births and Deaths received monthly from the Health Officers and Clerks. As will be seen by an examination of the following tables, we have so arranged them as to compress a large number of facts into small compass. This our lack of space has made necessary. It is probable an extra of four pages will be required for this department hereafter. The abstract of Births for 1887, is nearly finished. A few towns have not yet completed their returns, and a very few have made none at all. It must be remembered that the law under which these returns have been made to this office, was enacted March 8, 1887, and that it was several months before the Township Clerks became familiar with it, or made returns with accuracy and regularity. January, February, and March had passed before the regular work began, and some of the larger cities have not made returns for them, or only partial ones. This applies particularly to Births, as the Deaths are more fully reported. Judging by the record of January and February, 1888, both will be better hereafter, and more prompt.

As to the tables which follow, but one refers to 1887. The Death returns are not yet complete, but will soon be in shape to study when they shall be gotten into form for easy reference, and published.

The table of Births, 1887, page 104, gives the facts of sex, color, condition, number at birth, parent nativity, (American and foreign, and the last by country,) and a partial return of ages of parents. Percentages have been calculated of the totals of each class to the grand total, and will be found under that heading. It will be seen that the same facts are recorded for both sexes, and that a larger number of facts are tabulated than is customary in returns of this kind. A comparison with similar returns of other States will be the easiest way to discover the changes we have made; but a trial will be necessary for a fair test of their relative value.

The returns for 1888, will, so far as practicable, be published monthly, and within one month of their receipt, by the Secretary. Particular attention will be paid to the study of death cause, and its relation to sex, age, nativity, parent nativity, and any other fact possible through the returns. We hope to be able, in our next, or succeeding issue, to present the meteorological record, for the State, of the month to which the abstracts of death causes relate, provided we find it possible to use them to that end. Unless this can be done, the weather record is not worth the space it would fill, for our purpose—the study of its relation to disease cause.

*The monthly statement of Deaths and their causes, for January, 1888,* shows, at a glance, the sex, color, social state, age, nativity, and parent nativity, of the victims of each disease named in the list.

The Birth table is on the same form as the one for the yearly return of 1877, but does not include the details of parent nativity.

A SUMMARY OF THE RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OF-

	SEX			COLOR		SOCIAL STATE			AGE																
	Total	Male	Female	White	Colored	Single	Marr ed	Widowed	Unknown	Under 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	5-10 years	10-15 years	15-20 Years	20-30 Years	30-40 Years	40-50 Years	50-60 Years	60-70 Years	70-80 years	Over 80 Years	Unknown
MEASLES .....	3	2	1	2	1	2	1				1		1				1								
SCARLATINA .....	11	5	6	5	6	5					1	1	1	1	2										
DIPHTHERIA..... (Croup, 14 cases)	108	55	52	56	52	55	1		1	3	12	6	6	7	16	3	2	1							
WHOOPING COUGH..	5	1	4	1	4	1				1	2	2													
TYPHOID FEVER .....	42	16	26	16	26	11	4	1	1				1	1	2	5	6	4	1	1	2	2			
ERYSIPELAS .....	8	6	2	6	2	3	2	1		1							2		1	2	1				
(Pyæmia)						1																1			
PUERPERAL FEVER..	20	20		20		1	18		1							1	13	5	1						
DIARRHOEAL DIS- EASE	16	8	8	8		8	6	1	1	6		2				2	1	1							
BRAIN DISEASES ...	39	23	16	23	16	19	3	2	1	7	2	1		4		2	1	3	3	2	1	1	1	2	
(Meningitis)						11	3			4	2	1													
RHEUMATISM.....	6	2	4	2	4	1	3	1										1	2				2		
CANCER.....	18	4	14	4	14		10	4											2	5	2	5			
SCROFULA .....	6	3	3	3		2	1			1		1					1	1	1						
(Tuber. Peritonitis)						2																			
PHTHISIS .....	38	43	40	42	1	23	17	2	1					1		2	18	11	8	3	1			1	
HYDROCEPHALUS } (Tuber. Meningitis)	12	6	6	6		5	1			2	1				2		3	12	4	2					
APOPLEXY .....	24	16	8	16		6	8	1	1	3	3														
(Paralysis)						1	5																		
INSANE .....	14	8	6	8		3	4	1									1	2	1						
Gen'l Paral's of Insan.}						2	4																		
DISEASES OF HEART	47	29	18	29		11	11	6	1	5					2	1	2	1	2	1	1	9	6	2	
BRONCHITIS .....	39	24	15	24		19	4	1	1	18	4	1	4			1									
PNEUMONIA.....	80	43	37	43		30	10	2	1	8	3	2	2	2	4	4	1	7	9	1	5	1	1	1	
(Pleurisy)						16	18	3		2	2	1		4	2	2	4	5	4	1	5	1	1	2	
ENTERITIS—GASTRI- TIS (Haematemesis)	25	10	15	9	1	5	4	1	1	1					1	3	1	1			1	2	1		
NEPHRITIS .....	19	11	8	11		7	5	2	1	1															
(Bright's—Diabetes)						3	7	1	3						1		1	3	3	2	1		1		
STILL BORN .....	44	24	20	24		24				24															
INFANTILE DEB'LITY (Premature Birth)	87	49	37	48	1	49				47	2														
INFANTILE CONVUL- SIONS.	29	13	16	13		13				12	1														
OLD AGE .....	78	39	39	39		1	17	20	1													3	26	10	
VIOLENT DEATHS....	55	46	9	46		27	16	1	2	2			3		2	6	9	10	6	5	2	1			
OTHER DISEASES..	82	43	38	43		23	18	1	1	12	3	1	2	2											
(Unclassified)						17	16	4	2	6	2				3	2	7	7	2	2	3	1	1		
Total Males .....	529	529		526	3	613	350	38	10	249	29	11	13	16	29	9	23	55	42	35	31	43	35	12	1
Total Females.....	464		464	468	3	263	136	58	21	99	25	19	13	13	28	16	23	58	46	20	23	36	25	21	3
Grand Total .....	998			994	3	1				245	54	30	26	29	57	25	46	113	88	55	54	79	60	33	4





## 104 MONTHLY STATEMENT OF BIRTHS—JANUARY, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF  
THE SECRETARY OF THE STATE BOARD OF HEALTH UP TO MARCH 15, 1888.

GRAND TOTAL, 1871		PER CENT	TOTAL	MALES	FEMALES	UN- KNOWN
SEX	Males .....	51.44	1871	1014	952	5
	Females .....	48.3			952	
	Unknown .....	.26				5
COLOR	White .....	99.85	1908	1014	949	5
	Colored .....	.01	2	949	2	
	Unknown .....	.05	1	5	1	
CONDI- TION	Legitimate .....	99.43	1900	1009	946	5
	Illegitimate .....	.45	9	3	6	
	Unknown .....	.12	2	2	0	
NO. AT BIRTH	Single .....	97.51	1922	989	931	5
	Twins .....	2.33	46	25	21	
	Triplets .....	.16	3	3		
	Unknown .....					
PARENT NATIVITY	Both American .....	27.11	535	278	256	1
	Both Foreign .....	56.06	1105	568	534	3
	Am'n Father—Foreign Mother ..	4.56	90	46	43	1
	Foreign Father—Am'n Mother ..	9.74	192	79	95	
	Unknown .....	2.53	49	25	24	

## STATISTICS OF BIRTHS IN MINNESOTA—1887.

BEING AN ABSTRACT OF RETURNS OF BIRTHS MADE TO THE SECRETARY OF THE STATE BOARD  
OF HEALTH FROM DECEMBER 31, 1886, TO JANUARY 1, 1888.

No. at Birth	Condition	COLOR	SEX	GRAND TOTAL, 28,093					Per Cent	To- tal	Male	Fe- male	Un- k'n
				Per Cent	To- tal	Male	Fe- male	Un- k'n					
PARENT NATIVITY	AGE OF PARENTS	PARENT NATIVITY—CONTINUED	Norway....	Father.	14.6	4117	2168	1938	11				
				Mother.	14.3	4021	2124	1885	12				
			Sweden....	Father.	13.	3651	1949	1696	6				
				Mother.	12.8	3587	1913	1669	5				
			Germany..	Father.	20.4	5629	2999	2610	20				
				Mother.	17.8	4991	2696	2279	16				
			Ireland....	Father.	2.6	767	365	382	....				
				Mother.	1.9	546	270	276	....				
			Other C'ntles	Father.	8.2	2297	1198	1093	6				
				Mother.	7.6	2133	1094	1033	6				
PARENT NATIVITY	AGE OF PARENTS	PARENT NATIVITY—CONTINUED	Unknown.	Father.	2.5	721	336	370	15				
				Mother.	2.3	634	284	331	19				
			15-20 years.	Father.	.....	9	4	5	....				
				Mother.	.....	426	209	216	1				
			20-30 years.	Father.	.....	2930	1541	1379	10				
				Mother.	.....	4966	2665	2288	13				
			30-40 years.	Father.	.....	4384	2325	2047	12				
				Mother.	.....	3489	1811	1663	13				
			40-50 years.	Father.	.....	1931	1018	906	7				
				Mother.	.....	675	428	244	3				
PARENT NATIVITY	AGE OF PARENTS	PARENT NATIVITY—CONTINUED	50-55 years.	Father.	.....	309	169	139	1				
				Mother.	.....	4	1	3	....				
			55-60 years.	Father.	.....	66	39	27	....				
				Mother.	.....	2	2	....	....				
			Over 60 yrs.	Father.	.....	48	29	19	....				
				Mother.	.....	4	4	3	....				
			Unknown.	Father.	.....	18364	9557	8740	67				
				Mother.	.....	18370	9562	8741	67				
PARENT NATIVITY	AGE OF PARENTS	PARENT NATIVITY—CONTINUED	Minnesota	Father	6.8	1949	990	953	6				
				Mother	12.6	3545	1826	1709	10				
			N.E.States.	Father	2.3	653	328	323	2				
				Mother	1.6	456	232	220	4				
			Other U. S.	Father	22.3	6263	3290	2949	24				
				Mother	23.3	6516	3406	3086	24				
			Brit. Amer.	Father	5.4	1499	761	733	5				
				Mother	4.5	1287	629	657	1				
			Gr't Brit'n.	Father	1.9	546	277	267	2				
				Mother	1.3	373	207	166	....				

CIRCULAR OF CALIFORNIA STATE BOARD OF HEALTH, for February, states: "Smallpox, we are glad to say, is on the decrease, and at present shows no evidence of epidemicity. In San Francisco, during the month of February, 115 cases only, were reported; of these eighteen were Chinese—fifteen of them directly importing the disease from China. San Francisco is pre-eminently a city that shows the value of vaccination, and revaccination, and its positive power to preserve a community from an epidemic of the disease. San Francisco has had Smallpox in her midst for months; many of her streets reeking with filth, hundreds of her tenement houses hot-beds for contagious disease, and yet Smallpox is kept well under control, solely by the good sense of her people in getting vaccinated and revaccinated. If it were not for the constant importation of fresh cases from China, San Francisco would very shortly exhibit a clean bill of health, as far as smallpox is concerned. \* \* \* We notice that the "inevitable fool" predicted in a late circular, has arisen, and, through the press, is endeavoring, by misleading statements, to destroy public confidence in vaccination. This unwise course, being absolutely false in fact, is nothing less than favoring the spread of Smallpox and bringing misfortune and death where it might have been prevented. In Sheffield, England, where Smallpox was epidemic, owing to the prevalence of anti-vaccination theories, it was found that out of 95,000 vaccinated children, only 189 contracted Smallpox, and of this number *two died*, whereas out of 5,000 children unvaccinated, 172 contracted the disease, and *seventy died*. But to still further exhibit the protective value of vaccination, it was found that of 290 post-office officials, including postmen, carriers, messengers, telegraph operators, etc., who cannot obtain employment except they are successfully vaccinated, and whose services constantly brought them in contact with the disease, of this number *not a single one* contracted Smallpox. Surely this one single incontrovertable fact ought to convince the most skeptical of the saving power of successful vaccination. We trust that in California, the most enlightened of States, we will hear no more of these senseless obstructionists to the welfare and safety of our people, whose only object in thus raising doubts in the minds of the illiterate, is the incitement to a controversy which, without a basis of fact, is certain to convey a germ of distrust to the minds of many who are more easily controlled by their fears than convinced by the truth, no matter how skillfully or unequivocally presented.

PLEURO-PNEUMONIA is at last declared extinct in Chicago. The delay of the United States authorities is explained in the following letter. The quarantine established by this Board against Chicago is also removed. Parties importing cattle from suspected States, will save trouble and delay by obtaining a certificate of freedom from exposure and of good health, for which blanks will be furnished on application to this office.

UNITED STATES DEPARTMENT OF AGRICULTURE, }  
BUREAU OF ANIMAL INDUSTRY, }  
WASHINGTON, D. C., March 19, 1888. }

DR. C. N. HEWITT.

*Dear Doctor:*—As to the Chicago quarantine, would say, we shall remove all restrictions on the first of April. This would have been done before, but for the discovery of chronic cases of pleuro-pneumonia on December 29th. On investigation, we found there were still left some cattle which had been exposed and should have been slaughtered before that time. We ordered the slaughter of these, and all have been disposed of that we could get. I think now with the longer period of time that has elapsed, and the slaughter of nearly every animal in that part of the city where the disease has existed, there can be no longer any danger. Very respectfully,

D. E. SALMON,  
Chief of Bureau.

**TABULAR STATEMENT OF THE REPLIES RECEIVED TO CIRCU-**  
**DETAILED STATEMENT AND OPINIONS RESERVED.**

LOCALITY	COUNTY	REPORTER	Date first case	Away from home	SYMPTOMS
Roscoe Tp.	Goodhue	Dr. C. Hill	Feb. 25	No	Diarrhœa and finally dysentery.
Bird Island (v.)	Renville	Dr. Puffer H. O.	Feb. 10	Minneapolis	Cramps and diarrhœa, loss of appetite; not much fever; relapses occurred by exercise.
Rockford (v.)	Wright	Dr. Fassett H. O.	Jan. 8	Cities	Pain in stomach and bowels, vomiting and Purging.
Aitkin (v.)	Aitkin	Dr. Graves H. O.	Feb. 1.	Minneapolis	Purging and vomiting first.
Canby (v.)	Yellow Medicine	Dr. Chambers	Mar. 15	Minneapolis	Gripping pains; sick stomach; no vomiting.
New Barnesville	Clay	Dr. Barkow H. O.	Mar. 20 self	No	Vomiting and diarrhœa; cold fever after each vomiting; ringing ears.
New Ulm (c.)	Brown	Dr. Strickler H. O.	Jan. 11	Twin cities	Abdominal pain, vomiting, followed by diarrhœa.
Crookston (c.)	Polk	Dr. Dampier H. O.	Jan. 1	Fergus Falls	Gripping pains with diarrhœa.
Wabasha (c.)	Wabasha	Dr. W. H. Lincoln—H. O.	Feb. 20	Minneapolis	Diarrhœa, loss of appetite; weakness.
Preston (v.)	Fillmore	Dr. Love H. O.	Feb. 15	Minneapolis	Headache, vomiting, cramps, pain in bowels.
Becker Tp. Becker Tp.	Sherburn Sherburn	E. F. Cox, C. B. S. Shepardson, T. C.	Feb. 25	No	Purging and vomiting; after death stomach and back black.
Paddock Tp.	OtterTail	F. Martin, C. B. S.	Feb. 1	No	Pain in bowels; diarrhœa and some vomiting; no appetite.
Red Wing (c.)	Goodhue	Dr. Jæhnig H. O.	Dec. 8	No	Diarrhœa, nausea and vomiting.
Cannon Falls (v.)	Goodhue	Dr. A. T. Conley, H. O.		No	Pain in bowels, nausea and vomiting; frequent discharges and stomach sensitive.
Owatona (c.)	Steele	Dr. Morehouse H. O.			Catarrhal disease.
Lac qui Parle	Lac qui Parle	Dr. Gammell			Those of sporadic cholera morbus.
Carlisle Tp.	OtterTail	D. M. Brown		Minneapolis	
Chaska (v.)	Carver	Dr. Bowers H. O.			Diarrhœa without pain.
Spring Valley	Fillmore	Dr. Moore H. O.			Bilious colic, diarrhœa, vomiting in 2 cases; same as mild cases other seasons of year;

**W**INTER CHOLERA.—The above table includes the replies to the circular up to the middle of March. As the circular was very widely distributed, (outside of Minneapolis, where the Local Board of Health is collecting the data) to Local Boards of Health and Health Officers, we are sure that any outbreak would have been promptly reported. Out of 54 replies to the above date the table gives all which report anything resembling the disease.

The disease is neither new or unknown, and has appeared in other cities



*LAR LETTER ON WINTER CHOLERA (IN JANUARY NUMBER.)*

OTHER REPLIES WILL BE PRINTED NEXT NUMBER.

Other Cases in family	Sanitary Sur- roundings	How Many Cases	Averages, Dura- tion.	FATAL.	CAUSE
No	None	One.	4 or 5 days.	None.	Don't know.
Yes	Good	12: 3 females, 9 males; 7 adults; 2 children.	3 weeks; 5 relapses.	None.	Mississippi water; sick had drank it.
Yes	Fair	5: males, adults	2 to 7 days; 1 severe relapse	None.	Low water; heat and drouth of summer and fall; water impure.
One	None	2 males, 1 female.	10 days; one relapse.	None.	Cannot say; limited observations.
No	None	1 male, 1 female.		None.	Don't know.
No	Good	3 females, 1 child, 1 male	4 to 6 days; no relapse.	None.	Exposure and imprudence.
No	None	1-62 years old	8 days.	None.	
One	None	10 to 20; nearly all adults.	2 weeks; relapses in most cases.	2 reported in city	Intestinal catarrh, slight inflammation similar to influenza and cause same.
No	Good	2 females; both in Minneapolis	4 days; no relapse.	None.	Impure water; epidemic in Chicago, in '81, by water polluted by Chicago Riv.
One	Good	2 males.	10 to 15 days.	None.	Can't say.
No	None	1 female	2 days; unwell all winter.	One.	Sudden changes of weather. Low stage of water in the Mississippi River. Much sickness here.
Yes	Good	4 cases; 2 families.	6 to 7 days.	None.	Lack of care during change of weather.
	None	7: males 5, females 8; ad'ls, child'n; three cases imported	Mild cases; less than a week; others 10 to 14 days; relapses 25 per cent.	None.	Seen similar cases every winter; surroundings and water do not seem important as etiological factors; most cases reported immediately after sudden fall in temperature.
One		20: infants to adults age 50; no old people.	4 or 5 days; no relapse.	None.	Long continued extreme cold in winter, producing same effect as a long continued heat in summer.
		Several cases in winter. No notes.			
					More than usual number of cases of cholera morbus.
					None except those who have been in Minneapolis.
					A wide spread tendency to painless diarrhoea.
			Not more than 4 days.	1 fr'm heart failure, 74 years old.	Indigestion from over eating and exposure afterwards.

than Minneapolis, this winter. Dr. Marks, of Milwaukee, assures us that it has been general there, and it is reported elsewhere. We have several letters on the subject of causation, which we may publish later on. The summary of the literature and previous history of the disease is also reserved till occasion requires it. We expect an exhaustive report of the outbreak in Minneapolis, from the Health Officer, and await its publication before further comments on the subject. Any further information received here will, of course, be published.

SCARLATINA—At what age is it most fatal; the relation of sex to mortality; and is it a saving of life to isolate a child affected, from the rest of its family? The attention of our readers is called to the following extract from the last report of the Registrar General of England, just at hand. The conclusions numbered 1 and 2, are based upon the study of nearly 500,000 deaths from Scarlet Fever in the twenty-seven years, 1859-85, surely a sufficient foundation for reliable deduction. Nos. 3, 4, 5, and 6 are derived from the study of 17,695 cases of Scarlatina, admitted during twelve years into certain London Hospitals. We do not remember to have found, anywhere, so satisfactory a piece of statistical work, and we hope that the Registrar General of England will use his abundant materials to apply the same test to other infectious diseases, notably, measles.—H.

1. "The mortality from this disease is at its maximum in the third year of life, and after this diminishes with age, at first slowly, afterwards rapidly.

2. This diminution is due to three contributory causes: (a) the increased proportion in the population at each successive age-period of persons protected by a previous attack; (b) the diminution of liability to infection in successive age-periods of those who are as yet unprotected; (c) the diminishing risk in successive age-periods of an attack, should it occur, proving fatal.

3. The liability of the unprotected to infection is small in the first year of life, increases to a maximum in the fifth year, or soon after, and then becomes rapidly smaller and smaller with advance of years.

4. The chance that an attack will terminate fatally, is highest in infancy, and diminishes rapidly with years to the end of the twenty-fifth year; after which an attack is again somewhat more dangerous.

5. The female sex throughout life, the first year probably excepted, is more liable to Scarlet Fever than is the male sex.

6. But the attacks in males, though fewer, are more likely to terminate fatally.

Now it is sometimes said that the separation from its family of a child who is attacked by Scarlet Fever is scarcely worth the trouble and expense it involves, seeing that the rest of the children, though they may escape on that special occasion, are almost certain to contract this very common disease at some future time, and may, therefore as well, if not preferably, have it at once. The results, however, to which our statistical inquiry has led us, are completely subversive of such a position. They show independently of the plain fact that a very large proportion of persons go through life without contracting the disease; that the longer an attack is deferred, the less likely it is to occur at all; and not only so, but that even supposing it to occur eventually, the less likely it is to end fatally."

#### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF FEBRUARY,

##### DISEASES OF MEN.

Diphtheria.....	{ cases, 56
	{ deaths, 24
Scarlatina.....	{ cases, 30
	{ deaths, 2

##### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	67
Reported during the month.....	10
Killed.....	10
Released.....	2

Remaining March 1st isolated or not accounted for..... 65

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

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VOL. IV. NO. 1.

MARCH, 1888.

WHOLE NO. 37.

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## THE ANNUAL INSPECTION IN MAY—ITS METHODS AND VALUE.

WHEN this number of PUBLIC HEALTH reaches its readers the time for this inspection will be close at hand. Local Boards of Health will be held to a stricter accountability than heretofore. In all our centres of population, including all but the smallest villages, these Boards have now been in operation for three years, under the existing law. There can be no plea of ignorance of its requirements, for the law, and the circular on Sanitary Inspection, have been freely distributed from this office, to every Board, and the Secretary has written, when asked, or when the facts in his possession required. To get at the methods and thoroughness of the coming inspection, a circular of inquiry is now in preparation asking for the essential facts, so that a comparison will be possible, and the methods of the most efficient Health Officers, and Local Boards may be made known to others, and among themselves. All will therefore see, in the abstracts which we shall print, the sanitary work required, and done, in various parts of the State.

Much of the lack of thoroughness heretofore, was due to the lack of careful preparation before the inspection was begun. Notice, by special circular, if possible, should be served on every householder, and occupant of store, warehouse, shop or other building, from which nuisance, or danger to public health may come. State the law and the requirements of your Board, when the inspection may be expected, and that penalties will be enforced, if, after due notice, the law and your instructions are not complied with. It should be distinctly stated, in the notice, that the object of the measure is the prevention of sickness, infectious disease, and the removal of common nuisances. The greatest good of the greatest number, in the matter of health, is the real motive and should be clearly understood.

There are certain essentials of healthy living which are so plainly the right of every man, woman, and child, that the State has provided ways for all to secure and preserve that right, if they will. But experience has taught, at a fearful cost of suffering, life, and money, that the individual, even if he try, has little show

of success against combinations of others. "Business is business" means with the average a disregard of the health and happiness of others, if they interfere with profits, and nothing but legislation and fearless and independent execution of the law, will serve to mitigate the evil which cannot be entirely prevented, as a little reflection will show. One of the most important and powerful, of the agents of the State for the work referred to, is the Local Board of Health.

But what are the essentials above referred to? They are these, pure and abundant air; pure and abundant water; abundant sunlight, and sufficient clothing, which last includes the shelter of a house. It will be seen that, in a state of nature, God has provided, at least the air, the water, and the sunlight, but that in proportion as men advance in arts and culture, concentrate in centres of population, and engage in trades or professions, (as is now the growing fashion,) these essentials come to have an increasing money value, in fact are not attainable, in abundance, except at such expense, and trouble, as to make them luxuries.

That they are essential to health and well-doing, every sanitary act and law testify, as does the common experience of every one. There will, therefore, be no dispute of our present contention, that their abundant supply is the chief duty of Boards of Health. But how? First, by careful, and systematic, survey of your district, be it Township, Village or City. The May inspection is the first of these for the year, and in proportion to its thoroughness will be the knowledge of what is to be done. We ask a study of the circular which is a part of this number, particularly as to the method and record of the survey.

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*THE SANITARY COUNCIL AT ROCHESTER, MAY 29, 30 AND 31.*

ARRANGEMENTS are making for a very busy meeting, as a constant succession of subjects relating to the every day duties of Health Officers, chairmen, other members, and Clerks, of Local Boards, will come up for discussion. All delegates are expected to take a hand. The object in view is a better knowledge of Hygiene as a science and an art. In the discussion of every day methods—the most important of all—there is not a Board in the district which cannot contribute valuable matter, and we have made arrangements to have such speakers, papers, microscopic and other illustrations, of the more scientific sides of the common subjects, as will add to the interest and profit of the meetings. Arrangements are making for reduced railway fares to delegates, and the local committees will leave nothing undone for their pleasure and comfort.

Local Boards will see that they can make a very profitable investment of a few dollars to pay the expenses of their Chairman or other delegate to the conference, with instructions to attend every session and to submit questions and difficulties which have



arisen to all, for consideration. Come, therefore, "loaded to the muzzle," if you please, and you shall have opportunity, time, and a hearing. There is not a Board which cannot help, nor is there one so thoroughly equipped for its work as not to need the acquaintance, and sense of mutual relation, and inter-independence, which these conferences serve to give.

Will all Boards, who can do so, please arrange immediately, for their delegation, and notify the Secretary at this office. All questions as to local accommodations, hotel expenses, etc., will be answered by Dr. F. R. Mosse, Health Officer, Rochester.

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SMALL POX—DISTRIBUTION UP TO MAY 1, 1888.

AS will be seen by the following summary, this disease is on the increase in the United States, coming from the seaboard east and west to the central, northern, and southern States. As usual, immigration is the means, and careless disinfection of clothing the probable immediate cause.

Local Boards of Health of places where immigrants leave the trains must be on their guard, and follow up the slightest clue, notifying the Secretary immediately of each suspected case. Too great care cannot be used. The cases in Minneapolis and St. Paul, one each, have occasioned no new ones, nor is their history clear enough to give a clue to their probable origin.

Since January 21, 1888, this disease has been reported to this Board, as existing in sixteen States, as follows:

DOMINION OF CANADA.—None reported.

MAINE.—*Cumberland Mills*, March 20—Three cases. Suspected origin, rags, ("English Whites") in rag-room of paper mills.

MASSACHUSETTS.—*Milton*, March 1—Two cases, mother and son. Probable infection, rags, baled in Brooklyn, N. Y. *Huntington*, April 26—One case. Resident farmer.

CONNECTICUT.—*New Haven*, April 26—Mother and child. Mother infected by case varioloid called measles; child from mother. *Bridgeport*, April 26—One case, contracted in New York City.

NEW YORK.—*Brooklyn*—Many cases known to have occurred, but no official report obtainable, that city "not being within the jurisdiction of the State Board of Health," (Letter of Secretary, February 23, 1888,) and no reply having been received to a letter of inquiry of February 27, 1888, to Brooklyn.

PENNSYLVANIA.—*Chester*, February 4—One case. *Philadelphia*, reports, March 21, April 12, 20 and 27. Number of cases increasing.

NORTH CAROLINA.—*Goldsborough*, March 29—One case recently arrived from New York City.

LOUISIANA.—*New Orleans*, February 18—One case in city. February 24, two cases on shipboard. All removed to small pox hospital. Vaccination and disinfection enforced.

TENNESSEE.—*Jackson*, February 17—One case; lately visited Memphis. Vaccination and usual precautions taken.

KANSAS.—*Witchita* and *McPherson*, March 2—Several cases; origin unknown. First case from California. Vaccination, disinfection and quarantine enforced.

CALIFORNIA.—*San Francisco*, January 26—*Circular* for March reports disease only sporadic in San Francisco, and the epidemic disposition decreasing.

OHIO.—*Oakley*, February 4—One case reported by Dr. Lee, Secretary State Board of Health of Pennsylvania. No report received from the Ohio Board.

ILLINOIS.—*Greenville, Bond County*, April 4—One case varioloid, from St. Louis, Sunday. *Reno, Bond County*, April 19—One case, contracted in Colorado.

IOWA.—*Mitchelville, Polk County*, February 1—One confluent case. Farmer. Excursionist from California, where exposed in San Francisco. *The Bulletin* for April, 1888, reports twenty-one cases in State since importation from California in January, official notice of but one case received at this office.

WISCONSIN.—*Liberty, Vernon Co.*, January 21—One case, from St. Louis County, Mo., December 26, 1887. *Racine*, April 19. One case. Origin suspected immigrants from Denmark, or possibly carpet rags.

MINNESOTA.—*Minneapolis*, January 21—One case confluent. Removed to pest house and died. *St. Paul*, April 24. Child, 12 years old.

#### RETIREMENT OF HEALTH OFFICERS.

TWO representative, and pioneer, Health Officers, Dr. C. E. Dampier, of Crookston, Polk County, and Dr. E. D. Abell, of Farmington, Dakota County, have retired by expiration of term of service. Dr. Dampier came into office under peculiar difficulties. There was not another organized Board of Health in Polk County, and popular support had not yet been secured for the sanitary service. The doctor began his work, April 9, 1885, and four days after was called to the first case of what proved a wide-spread outbreak of small pox. It was in a boarding house, and was promptly cared for. In May, another case broke out in a hotel, then another in a private family, and so on till eleven cases had appeared in Crookston alone. They were single cases, removed from each other, and suggested some contagion outside the city; we found it in a logging camp, forty miles away. Dr. Dampier's service was a trying one, but by his tact, and steady performance of his duty he stayed the disease in his own city, and was of great assistance to those of us who had to deal with it elsewhere. Another but more limited outbreak of small pox was promptly suppressed in 1886. But, after all, it is in the every day duties of his office that the efficient Health Officer is most thoroughly tested, and here Dr. Dampier did faithful service, laying good foundations upon which his successor may reasonably be expected to carry the work of municipal sanitation to still better results.

Dr. Abell has had a less eventful but not less useful service. A missionary for health in a field where little help was to be expected, he went quietly to work, found encouragement where he least looked for it, and no help where he had a right to find it—a very common experience. The local newspaper gave strong support, and we reprinted from it an editorial on "An unpleasant subject," putting the matter in so happy a way that it was one of best contributions yet made to the discussion. Under the doctor's lead Farmington has begun to appreciate and to do some work for health, for her citizens. With her increasing business prosperity she ought, as a matter of profitable business, to do still more.

## REPORTS OF HEALTH OFFICERS AND LOCAL BOARDS OF HEALTH.

*To the Mayor and Common Council of the City of Rochester :*

In order to inform you of the condition of the health department of your administration, I wish to make the following report:

Although the Board in the past year have found it necessary to order the removal of a large number of nuisances and cleaning of premises, also, to quarantine for contagious diseases considerably, there has not been the slightest necessity to resort to legal means to enforce any measure, everyone appreciating that general cleanliness and quarantine regulations react for their own private good. The Board found it necessary to notify or otherwise urge occupants of two hundred and seventy-premises to place the latter in sanitary condition, showing a rather large number of careless people. A considerable number of nuisances have also required the attention of the Board.

A little very mild scarlet fever occurred from May 25th to August 11th. Eleven cases in six families, with no deaths, the first case originating from exposure at Chatfield, the rest developing from exposure to this one.

Diphtheria occurred from July 27th to August 10th, 1887, and from September 17th, 1887, to February 17th, 1888, in nine families, there being eighteen cases with one death.

Quarantine and disinfection has been thorough in all cases, limiting both diseases to a small number of families, and where the sick were kept strictly apart from the well and disinfection thoroughly carried out, the cases were limited in each family, and in some large families there being only one case.

The epidemic of poisoning from smoked sturgeon was reported to the State Board of Health and steps were taken by them to regulate its future sale. \*

Ordinance No. 88, in relation to privies, and No. 89, to scavengering, worked well during the last, and will accomplish much more good during the coming season.

The banks of Bear Creek have received considerable attention and are in much better sanitary condition than formerly, and in only one or two particulars need improvement, which will be carried out as soon as possible in the coming spring.

The water furnished by the city water works is most excellent, and is growing more popular.

Offensive trades and employments have required some attention, viz: the railroad stock-yards and the slaughtering and rendering establishments. The latter are being removed outside the limits to north of the city.

For the year ending March 1st, 1888, there have been reported 112 births in the city; 59 males, 12 females, 4 still births, 7 sex not reported, and one pair of mail twins. A birth rate of 22.25 per thousand for a population of 5,000, or 24.8.9 for a population of 4,500. \* \* \*

*Causes of Death.*—Consumption, 7; tubercular meningitis, 2; old age, 3; paralysis, 3; croup, 3; result of injury, 2; spasms, 2; typhoid fever, 2; peritonitis, inflammation of the bowels, cancer, drowning, poisoning, heart disease, spinal meningitis, diphtheria, congenital spinal disease, apoplexy, pneumonia, ulceration of stomach, chronic nephritis, Bright's disease, septicæmia, premature birth, hydrocephalus, anæmia, and unknown, 1 each. Deaths from tubercular disease being 9.43 of 21 per cent, or more than one-fifth of the whole, and old age 7 per cent. Eliminating accidents and death from old age, and our death rate from disease alone, is only 7 per thousand.

Expenses of Board of Health for the year, including salaries for Health officer and members of the Board, printing, postage, expressage on water samples for analysis, and scavengering, are in round numbers \$150.

Dr. Hewitt, Secretary of the State Board of Health, will arrange for the conference in regard to the pollution of Silver Creek in the latter week of May.

Your Local Board of Health has, at the suggestion of the State Board of Health, invited the latter body to hold a sanitary conference in this city during the last week in May, the object being to get together all the city and township Boards of Health throughout the State, to map out harmonious action in regard to contagious diseases of men and animals and to hold two or three popular meetings to awaken interest and give instruction in regard to public health matters in our own city. The expense to the city will be nothing more than hall rent.

Sanitary matters are in a prosperous condition and the Board of Health on a good working basis.

F. R. MOSSE, M. D., Health Officer.

March 19, 1888.

A SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	SEX			COLOR		SOCIAL STATE		AGE																				
	Total	Male	Female	Unknown	White	Colored	Unknown	Single	Marr ed	Widowed	Unknown	Under 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	5-10 years	10-15 years	15-20 Years	20-30 Years	30-40 Years	40-50 Years	50-60 Years	60-70 Years	70-80 years	Over 80 Years	Unknown	
SMALL POX.....	1	1			1			1																				
MEASLES.....	8	6	2		5	2	1	6				2	1	1	1					1								
SCARLATINA.....	13	6	7		6	7		6					1	2	1	2	1	1										
DIPHTHERIA..... (Croup, 24 cases)	87	48	39		48	39		48	1			8	4	7	6	3	4	12	6	2	1	1						
TYPHOID FEVER.....	30	17	13		17	13		12	4	1	1	1		2			1	1	2	5	2	3	1					
ERYSIPELAS..... (Pyæmia)	12	8	4		8	4		3	3	2	2	2						1	1	1	1	4	2					
PUERPERAL FEVER.....	30	30			30			3	27										17	7	5							
DIARRHÆAL DIS- EASE	19	14	5		13	1		14	5			7	4	1			2		2	1								
BRAIN DISEASES... (Meningitis)	55	28	27		28			26	2	5		7	1	1	1	1	4	5	2	3	1	1	1	1				
RHEUMATISM.....	8	5	3		5	3		2	3	1									2	2		1	1					
CANCER.....	22	11	11		11			2	8	1										1	4	3	3	2		1		
SCROFULA..... (Tuber. Peritonitis)	4	1	3		1	3		1	3				1	1					1									
PHTHISIS.....	90	43	47		43			19	18	4	2	1	1	1				1	3	17	9	8	2	7			1	
HYDROCEPHALUS... (Tuber. Meningitis)	7	4	3		4	3		4	5			2	1				3		3	21	8	5	2	1				
APOPLEXY..... (Paralysis)	30	17	13		17			4	11	2										3	4	2	4	6	1		1	
INSANE..... Gen'l Paral's of Insan.	9	5	4		4	5		4	1	1	1								2	1	1	2	1					
DISEASES OF HEART	33	19	14		19	1		9	8	1	1	1							3	2	4	7	3					
BRONCHITIS.....	32	19	13		19			12	1			9	4	1			1	1	1	3								
PNEUMONIA..... (Pleurisy)	90	52	38		49	1		35	13	3	1	4	17	2	1	2	1	2	1	4	1	3	4	5			1	
ENTERITIS—GASTRI- TIS (Haematemesis)	44	19	25		19			13	4	1	1	4	2	1				1	2	4	1	1	2	4			1	
NEPHRITIS..... (Bright's—Diabetes)	15	10	5		10	5		2	5	2	1			1				1	3	1	1	2	4					
STILL BORN.....	43	27	17		29	3		29	11			3	32	11														
INFANTILE DEBILITY (Premature Birth)	80	44	36		41	2	1	44				42	1	1													2	
INFANTILE CONVUL- SIONS.	52	32	20		32	20		32				28	3				1										1	
OLD AGE.....	94	48	46		48			26	19	1		26	15	29	2										1	26	21	16
VIOLENT DEATHS....	61	46	14		46	1		28	11	4	3	5		1	1	1	1	1	4	9	7	4	3	1	2		7	
OTHER DISEASES... (Unclassified)	86	45	41		45			29	12	3	1	12	4	2	2	1	2	1	3	6	2	1	3	8			1	
Total Males.....		575		6	639	6	6	678	134	98	21	27	17	16	10	28	17	21	64	38	27	27	49	29	22		13	
Total Females.....			474		463	5		284	133	50	28	105	25	16	8	11	27	22	26	63	38	29	21	27	34	17	5	
Grand Total.....	1055	575	474	6	1085	11	6	962	267	148	49	52	33	24	21	55	39	47	127	76	56	48	76	69	39	18		



OF THE SECRETARY OF THE STATE BOARD OF HEALTH TO MARCH 15, 1888.

NATIVITY		PARENT NATIVITY																									
City, Village or Tp.	Other Minnesota	Other United States	Foreign	Unknown	Both American	Both Foreign	American Father Foreign Mother	Foreign Father American Mother	Unknown	Minnesota	N. Eng. States	Other U. S.	British America	Great Britain	Norway	Sweden	Ireland	Germany	Other Countries	Unknown	Localities Invaded	Counties					
1	1				1	3		1	1			1	1								1	1	1				
2	4	1			2	3						2	2														
3	2	1			1	3		2				1	1		3	2	1	1									
4	1					5		1	1			1	1	1			2	2									
5					12	23		4	5	4		13	15		8	7	2	8									
6	3	3	1		5	7		1	1	1		12	11		7	6	2	7									
7	1	2			1	3						3	3		1	1	1	1									
8	1	1			3	4						3	3		1	1	1	1									
9	1	2			1	1		1	3			3	1		2	2	1	1									
10	5	18			2	24		1	3			2	3		1	4	4	3									
11	3	4			3	3		1	1	2		3	1		3	3	1	1									
12	1	2			1	1						1	1		2	2	1	1									
13	2	3			10	11		1	1			4	7		1	1	1	7									
14	3	7			2	3						2	2		1	1	2	2									
15	3	7			3	3						2	2		1	1	1	3									
16					2	2						1	1		1	1	1	1									
17					2	9						1	1		1	1	1	1									
18					5	5						2	2		1	1	1	1									
19												1	1		2	2	2	2									
20												1	1		1	1	1	1									
21												5	6		1	1	1	1									
22												2	2		2	2	2	2									
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96												1	1		1	1	1	1	</								

## MONTHLY STATEMENT OF BIRTHS—FEBRUARY, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF  
THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO APRIL 15, 1888).

GRAND TOTAL, 2136		PER CENT	TOTAL	MALES	FEMALES	UN- KNOWN
SEX	Males .....	52.74	2136	1126	.....	.....
	Females .....	46.88	.....	.....	1002	.....
	Unknown .....	.38	.....	.....	.....	8
COLOR	White .....	99.95	2135	1126	1101	8
	Colored .....	.05	1	.....	1	.....
	Unknown .....	.....	0	.....	0	.....
CONDI- TION	Legitimate .....	99.16	2118	1119	991	8
	Illegitimate.....	.84	18	7	11	.....
	Unknown .....	.....	0	0	0	.....
NO. AT BIRTH	Single .....	97.75	2088	1100	980	8
	Twins .....	2.25	48	26	22	.....
	Triplets .....	.....	0	0	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY	Both American.....	24.16	516	260	253	3
	Both Foreign .....	57.02	1218	663	551	4
	Am'n Father—Foreign Mother.	5.43	116	62	54	0
	Foreign Father—Am'n Mother.	11.38	243	115	128	.....
	Unknown .....	2.01	43	26	16	1

## WINTER CHOLERA, REPORTS ON

Replies, denying the existence of unusual bowel trouble have been received from the following gentlemen, whose names are arranged in order of counties and towns. If there are any others who can give any information on this subject, we should be glad to hear from them immediately, if only by postal card:

BECKER CO.—*Atlanta Tp.*, O. O. Noben, C. B. H.; *Lake Park (v.)* Dr. N. Juell, H. O. RIG STONE.—*Beardsly*, P. Forstell, C. B. H. BROWN.—*Springfield Tp.*, Danl. Burns, C. B. H. DOUGLAS.—*Evansville (v.)* Dr. W. H. McKenzie, H. O. FARIBAULT.—*Minnesota Lake, (v.)* Dr. Rowe, H. O. FILLMORE.—*Lanesboro, (v.)* Dr. Hvoslef, H. O.; *Chatfield, (v.)* Dr. Twitchell, H. O. GOODHUE, *Kenyon, (v.)* Dr. Overholt, H. O. ISANTI.—*North Branch Tp.* Thomas H. Horton, C. B. H. LE SUEUR.—*New Prague, (v.)* Dr. Landenberger, H. O. MEEKER.—*Kingslon Tp.*, John Clay, C. B. H. MORRISON.—*Motley Tp.*, H. B. Morrison, C. B. H. NOBLES.—*Adrian, (v.)* Dr. May, H. O. OLMSTED.—*Byron, (v.)* Dr. Keyes; *Haverhill Tp.*, G. W. Duter, C. B. H. OTTER TAIL.—*Tordenskjold Tp.*, E. Gunderson, C. B. H.; *Dora Tp.*, W. F. Shores, C. B. H.; PINE.—*Hinckley, (v.)* Dr. Scott, H. O.; *Sturgeon Lake Tp.*, A. H. Clark. POLK.—*Fanny Tp.*, J. G. Finney, T. C.; *Keystone Tp.*, D. E. Giddes, C. B. H.; *River Falls Tp.*, L. R. Bramsness, C. B. H. POPE.—*Grove Lake Tp.*, J. Emerson, C. B. H.; *Langhei*, J. Nelson, C. B. H.; *Swift Falls Tp.*, O. Peterson, C. B. H. RAMSEY.—*White Bear, (v.)* Dr. Francis, H. O.; *Moundsview, Tp.* S. A. Thompson, C. B. H. RENVILLE.—*Cairo Tp.*, M. Finlay, C. B. H. ROCK.—*Rose Dell Tp.*, C. S. Bruce, C. B. H. SCOTT.—*Belle Plaine*, G. R. Moloney. STEARNS.—*Sauk Centre Tp.*, R. A. White, T. C. TRAVERSE.—*Brown's Valley, (v.)* Dr. Cummins, H. O. WABASHA.—*Lake City, (c.)* Dr. Vilas, H. O. GILLFORD Tp., M. P. Bartlett, C. B. H. WASECA.—*Millon Tp.*, G. Gehring, C. B. H. WINONA. *St. Charles, (v.)* Dr. Clarke, H. O. SARALOGA Tp., Ira Murphy, Mem. L. B. of H.; *Ulica Tp.*, J. H. Perry, Mem. L. B. of H. WRIGHT.—*Howard*, Dr. Chilton, H. O.; *Stockholm Tp.*, A. A. Johnson, C. B. H. YELLOW MEDICINE.—*Granite Falls, (v.)* Dr. Cressy, H. O.

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF MARCH,

## DISEASES OF MEN.

Diphtheria.....	{ cases, 70
	{ deaths, 27
Scarlatina.....	{ cases, 43
	{ deaths, 4

## DISEASES OF ANIMALS.

Cases of glands remaining isolated or not accounted for.....	65
Reported during the month.....	48
Killed.....	47
Released.....	18
Isolated.....	16

Remaining April 1st isolated or not accounted for ..... 48

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

CIRCULATION, 2,000 COPIES.—SUBSCRIPTIONS, FIFTY CENTS PER ANNUM.

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VOL. IV. NO. 2.

APRIL, 1888.

WHOLE NO. 38.

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**CHOLERA ASIATIC—CHOLERA INFANTUM.**—The danger of the importation of the first named disease, is growing less. It is no longer reported in Europe, and English authorities seem to feel at ease about it. If Health Officers will help us to persuade the people of Minnesota that the cholera we have to fear is cholera infantum, much more than Asiatic cholera, we shall be able to secure a readier compliance with essentials of healthy living than at present. It is in the home that the most active causes are in most fatal operation, in air, food, drink, clothing, and care. These are, only too often, influenced by conditions of location, poverty, ignorance, or carelessness, and by the still more subtle influences of inheritance, and other disease prevalence. The problem of prevention or diminution, is therefore, not easy in some of its respects. Despite these difficulties, it is easy in many others, which we will discuss later.

Meantime here are the conclusions of the vital statistics of 1887, as to cholera infantum. Of total deaths of all ages (13,107,) 1189, or 9.03 per cent were of children of five years and under, by cholera infantum. A full regiment of ten full companies, (100 babies in each,) was the draft made on our homes and families by this single disease in 1887. *The influence of season* is shown by the fact that 1045, or 88 per cent of those children died in the months of June, July, August and September; 14.72 per cent in June; 34.15 per cent in July; 27.75 per cent in August; and 11.27 per cent in September.

*As to age,* this is the record: Of the whole number (1189) 1183 were under five years, 99.5 per cent; 80.58 per cent were under one year; 11.10 per cent between one and two years; 2.86 per cent between two and three years; 1.85 per cent. between three and four years; 0.67 per cent between four and five years; and 0.42 per cent between five and six years.

*Parent nativity:* Both parents American, 20.35 per cent; both parents Foreign, 63.84 per cent.

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**SMALL-POX** seems slowly working its way in our direction, though not always on lines of travel, nor by immigration from abroad, but by byways, and from unexpected directions. We have

escaped, so far, but have little hope of doing so entirely. Look out for it to strike anywhere, in country or in town, both are liable. The only protection is vaccination of all who have not been so protected, and a careful and constant look-out for, and readiness for, the first case. In the event of a suspected case, this is the course to take: 1st. Don't be deceived and confound chicken-pox, or measles, with small-pox. A Health Officer will say, "That is easier said than done." Conceded, but this you can do, and should do: *In cases of doubt always isolate as if the disease was known to be present.* There is no hardship in so doing as a matter of public safety, and the doubt will be removed in a few hours, at the farthest. Should it result that the disease was chicken-pox, measles, scarlet fever, or only an indefinite rash, hard to define, it will be cause for congratulation that the case was not small-pox; but the isolation will still be needed for any of the rest, except the last, anyway, and at such a time had it proved either of the others, it might have distributed infection to many people before discovered, if attended in the, too common, "happy go lucky" way. Should a case be discovered, the next thing to do is to isolate, not only the sick person, *but all who have been exposed by him.* This last is rarely impossible, but often difficult. It is worth all the trouble it costs, however. A single individual, who did not himself know of his exposure, took the infection into the big woods above Aitkin, and caused fifty-eight cases and seventeen deaths, in 1882-83.

Vaccinate all in the infected house whether vaccinated before or not, except, of course, the patient. Isolate the sick from the well, who have been exposed. If humanized eighth day lymph, from a healthy baby's arm, can be obtained, it is best possible, because it is the quickest and surest in operation; just what you need at this time. If you have not this form of virus at hand, the next best is either the freshest procurable bovine lymph, on ivory points, or, which the writer prefers, a fresh crust from an infant's arm. The latter can generally be furnished from this office, through the courtesy of a member of this Board. Which ever form you select, act promptly, remembering that time is a very important consideration.

Immediate notice, telegraphic if need be, must be sent to this office to be followed by a detailed account next mail. The most important questions of such a report are, Where did the infection come from? Who brought it? When was he exposed and when did the first symptoms appear? When was he isolated and where? Who have been exposed by him? Where are they? What has been done for them? The object is to get an account of all the facts bearing on the source, distribution, and virulence of the disease, as fully and promptly as possible.

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THE ANNUAL AND SPRING INSPECTION REPORTS are much delayed by the backward and wet season. We begin the pub-



lication of such as are at hand, in the next issue. It will be noticed that, in many cases orders have been given, but result not reported. These we shall hear from later. The personal correspondence of the Secretary indicates an increasing use of the earth closet as a substitute for the "hole-in-the-ground." A plan for its construction will be sent, on application.

#### OPINIONS OF ATTORNEY GENERAL.

QUARANTINING INFECTIOUS DISEASES.—ONE MEMBER OF A BOARD CAN BE DETAILED FOR SUCH DUTY.

The question having arisen as to whether it was necessary for the whole Board to take an active part in quarantining diphtheria, the Secretary submitted the matter to the Attorney General, asking if he was right in supposing that it was not necessary for the whole Board to take an active part as above, but they may detail one member for such duty. June 20th, the Attorney General replied: "I fully agree with you in your suggestion that it is not necessary for the whole Board to take an active part in the quarantine measures and that one of their number can perform such duty, and that the town Board could authorize the Chairman, or any other member, to take the necessary measures to effect an efficient quarantine."

RELATIONS OF VILLAGES ORGANIZED UNDER GENERAL VILLAGE LAW TO TOWNS CONTAINING THEM, AS RESPECTS THE COLLECTION OF VITAL STATISTICS.

For the benefit of Clerks of towns containing villages organized under the general village law, the following opinion of the Attorney General is published. June 16, the matter was again referred to him, concerning another locality. June 20, he replied, reaffirming his position of January 18, 1888.

STATE OF MINNESOTA, ATTORNEY GENERAL'S OFFICE, }  
ST. PAUL, January 19, 1888. }

*Chas. N. Hewitt, M. D., Secretary State Board of Health, Red Wing, Minn.*

DEAR SIR:—Your favor of the 14th inst., containing letters relating to obtaining vital statistics in certain towns in Carver County. While the relation existing between the village and town in the case of villages organized under our general village law, is a somewhat vague and shadowy one, under the decision of our courts, yet so far as the villages are given power by the law, they are separate and distinct from the towns. It is true that the Supreme Court has held that for general election purposes they are a part of the town, although that question is again before the same court, and is being reconsidered; but as above suggested, in all matters where they are given authority under the statute, they act independently of the town. This would apply to the subject of vital statistics. The law expressly provides that the Board of Health of the village shall furnish and report for the village, and Town Clerks shall furnish for townships, therefore for the purpose of obtaining these statistics, they are as separate and distinct as though they were incorporated cities, as fully as they are, (to illustrate,) in the matter of management of their internal affairs.

This, I think, fully covers the question raised by your inquiry. I return the enclosed letter as requested. I am,

Very respectfully yours,

MOSES E. CLAPP, Attorney General.

## INFECTIOUS DISEASES OF CATTLE.

**G**LANDERS.—The differentiation of this disease from certain forms of catarrh, and from consumption, becomes more difficult as the self-evident cases are killed by the vigilant action of the Local Boards of Health. The subjoined extract from a letter just at hand, from the Health Officer of Adrian, Nobles County, expresses the common difficulty. The answers follow the questions for convenience. We have arranged to begin a study of the specific poison of glanders and of the best method of diagnosing the disease, in our laboratory, and have the promise of personal aid of one of the best bacteriologists in this country, and of a veterinary surgeon who has made glanders a special study. It is expected, at the same time, to make similar inquiry as to so-called black-leg, and the malignant catarrh of cattle. Glanders will receive the first and most careful attention, and we have strong hopes of increasing the certainty and promptness of the discovery of its presence or absence in any given case, and thereby aiding and lightening the work of Local Boards, Health Officers, and veterinary surgeons.

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June 22, 1888, Dr. C. C. May, Health Officer, Adrian, Minn., writes concerning glanders: "The questions which are in the way of a satisfactory diagnosis, for myself, are such as these: Does glanders ever occur spontaneously? Are glanders and gleet different stages of the same disease? May gleet 'run into' glanders, or is it of itself contagious? May strangles or distemper occur in old horses, and having occurred, may it, (or they, if the two are different,) terminate in gleet, which may, in turn, result in glanders? Is it probable or possible that a horse with chronic glanders, may be driven, fed, watered and stabled with other horses for a year or more, and not communicate the disease? If nasal discharge, ulcers and enlarged submaxillary glands occur in both gleet and glanders, and were 'chronic catarrh,' as asserted by some authors, how are they to be distinguished?"

To the above the Secretary replied June 23, 1888, as follows: "To your first question, No. (Glanders does not occur spontaneously.) 2d. Glanders and so-called 'gleet,' are not unlikely stages of the same disease. Gleet is a very undefined disorder, and a name to cover the ignorance of a veterinarian. Our best authorities do not recognize it as a specific disorder. A chronic form of nasal catarrh might, perhaps, be called by such a name. In our State for some years any chronic or persistent discharge from the nostrils, is just reason to suspect the existence of glanders and for the isolation of the animal until examined. No horse affected with chronic glanders can be driven, fed, watered and stabled with other horses, except it communicate the disease, *or very rarely*. Nasal discharges and nasal ulcers, with hard, enlarged submaxillary glands, do not occur in any form of chronic catarrh, but are characteristic of glanders alone. I am very glad to answer your questions, and advise the immediate isolation of any animal with the clearly marked symptoms as above. See the circular on glanders for further details.

## DISEASE OF CATTLE IN HECTOR TP., RENVILLE CO.

May 3, 1888, Mr. J. B. Tozer, of Hastings, Minn., reported that a peculiar disease was killing cattle in Hector Tp., owned by himself and others, and asked the Secretary for any advice or aid which he could give. This notice was received during the Secretary's absence. It was immediately acknowledged by the office. May 8, Secretary returned and telephoned Mr. Tozer at Hastings, to call that afternoon, which he did, and explained the disease as far as possible. The same day Secretary ordered B. Lambrechts, V. S., of Willmar, to investigate the matter, which he did, and reports as follows:

*"Dear Sir:*—I have the honor to report, that upon the receipt of your favor of May 11, I started immediately for Hector, Renville Co. Mr. J. B. Tozer was informed by wire and met me promptly. With the Local Board, we visited his farm, two miles from Hector, and made a thorough examination of all his stock. He stabled last fall sixty-six head of cattle, of which eleven cows and thirteen yearlings have died since the middle of January. At present sixteen head are sick. I held a post mortem of two cows, that had been killed while I was there, of one of which I send you specimen per express.

Monday morning we proceeded for further investigations throughout the town. We first visited Mr. J. Borrows, who last fall started in with thirty-one head, of which six have died during the winter. The first loss was in September. Two cows and one yearling are at present sick.

Mr. W. E. Kempe, who stabled forty head last fall, has had a loss of fifteen head since then. Four head are now sick. Mr. Thomas Toole started in with twenty-five head in the fall, of which twelve have died during the winter and spring. At present three head are sick.

Mr. Foster lost ten head out of forty; at present two are sick.

Mr. Kanke was the last one visited. He stabled forty head, and lost during the winter fourteen head; none are sick.

The above-named cattle owners are, as near as I can discover, the only losers. They all live within a radius of six miles. Their pastures and bay lands are mostly sloughs. The cattle get their drinking water from stagnant sloughs in summer, and from wells near the stables in winter. The stables are mostly built from wood, are insufficiently ventilated, so that at times they are either too cold or too warm.

The symptoms of this disease are generally not noticed at first. The animal commences to loose flesh, the limbs and back become weak, it has scurvy and tight-laying hide, cold horns and legs, cold and dry nose and mouth, a peculiar sinking of the eyeballs, some discharge from the nose, and a rasping sound while breathing. At times it will also cough some. At this time the owner will first suspect that there is trouble. In a short time the animal is unable to rise, and dies in a time varying from a few days to two weeks.

There is no doubt in my mind that this disease is the so-called malignant catarrhal fever, which expends its specific effects upon the mucous membrane lining, the sinuses of the head and nasal chambers, manifested by rigor, dullness and debility, the mucous membranes becoming of a bluish red color.

The cause of the disease is, in my opinion, contracted from the soil by grass, hay and water, and besides bad stabling, etc.

I have given my best advice how to take care of the sick, by giving them tonics, mineral acids, and ground feed, bran, corn and oats together, instead of whole oats which has been the common feed.

My advice to the Board, was to separate the sick, and herd them by themselves. To have all carcasses, which are now laying over ground, buried, and to report all new cases to the State Board.

Very respectfully,

B. LAMBRECHTS, V. S.

## MONTHLY STATEMENT OF

A SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	SEX			COLOR			SOCIAL STATE			AGE																	
	Total	Male	Female	Unknown	White	Colored	Unknown	Single	Married	Widowed	Unknown	Under 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	5-10 years	10-15 years	15-20 years	20-30 years	30-40 years	40-50 years	50-60 years	60-70 years	70-80 years	Over 80 years	Unknown
MEASLES .....	14	9	5		9	5		9	4	1		3	3	2	1												
SCARLATINA .....	17	6	11		6	11		10	1			1	3	1	2				1	1							
DIPHTHERIA..... (Croup, 26 cases)	76	44	32		44	32		32				4	7	8	5	4	1	9	1	2	1						
WHOOPING COUGH..	9	6	3		6	3		6	3			1	1	2	2	1	1										
TYPHOID FEVER....	30	16	14		16	14		9	5	2			1	1	1		1	1	1	9	3	2	1	1	1		1
ERYSIPELAS .....	28	17	11		17	11		8	7	2		5	1	1	1					2	3	3	3	1		1	
(Pyæmia) .....												1	1														
PUERPERAL FEVER..	38	38			38			5	33											2	18	10	7				1
DIARRHOEAL DIS- EASE	18	8	10		8	10		6	2			1	1	1			1	2	2	2	1	1	1				
CHOLERA INFANTUM	3	3			3			3				3															
BRAIN DISEASES... (Meningitis)	59	35	24		35	24		31	3	1	1	16	5	2	1	2	1	1	3	2			1	2	1		
RHEUMATISM.....	3	1	2		1	2			2																		
CANCER.....	30	18	12		18	12		3	12	3							1			1	3	5	2	5	3	2	
PHTHISIS.....	105	53	52		53	52		24	24	1	1	1	1	3	1			1	3	6	19	15	7	3	5	2	1
OTHER TUBERCULAR DISEASES	20	11	9		11	9		8	2		1	2	4	1	1	2	1	2	1	1		1	1	1			
APOPLEXY..... (Paralysis)	21	12	9		12	9		1	8	3							1			1	1	3	3	5	2	1	
INSANE..... Gen'l Parol's of Insan.	8	4	4					2	2	2								2									
DISEASES OF HEART	38	21	17		19	17	2	8	12		1	4							1	1	4	2	2	5			
BRONCHITIS .....	51	22	29		22	29		21	1			11	2	1	2	1	1	1	1	2			1				
PNEUMONIA .....	106	64	42		62	42	1	43	17	5	4	14	5	4	2	1	2		6	9	4	4	4	6	2		1
(Pleurisy) .....																											
ENTERITIS—GASTRI- TIS (Hæmatemesis)	58	24	34		24	34		16	7	1	5		1	1	1	2	2		1	4	3	4	1				
NEPHRITIS..... (Bright's—Diabetes)	18	11	7		11	7		6	5	2	1	1	1				1	1	1	1	1			2			
STILL BORN.....	58	33	24		34	24		34				34															
INFANTILE DEBILITY (Premature Birth)	124	70	54		70	54		70				70															
INFANTILE CONVUL- SIONS.	63	35	28		35	28		35				31	4														
OLD AGE .....	92	48	44		47	44	1	1	27	19	1														31	17	
VIOLENT DEATHS....	31	26	5		26	5		14	10	3	2	2	2	1	1	1		1	1	5	3	5	3	1	1		7
OTHER DISEASES... (Unclassified)	70	25	45		25	45		11	10	1	3	1	3	1	1	1	1	1		3	5	2	5			1	
Total Males .....	622	622		1	618	4	1	419	332	55	33	167	43	38	21	12	24	13	20	54	42	39	30	41	37	17	4
Total Females.....	565		565		565			332	175	55	33	167	43	38	11	6	22	11	26	67	47	37	35	28	37	11	4
Grand Total.....	1188	22		1	1183	4	1	751	507	110	66	334	87	79	32	18	46	35	81	109	76	75	69	74	28	8	



OF THE SECRETARY OF THE STATE BOARD OF HEALTH TO MAY 15, 1888.

[illegible]

## DISEASE OF SHEEP IN SIOUX AGENCY TP., YELLOW MEDICINE CO.

May 1, 1888, Mr. Wm. F. Martin, P. O., Wood Lake, reported that a peculiar disease of sheep is existing in his town and vicinity. He reported: "You can't see anything wrong with them until they fall down. Their legs appear to get weak. They droop around for a day or two and then die. The fat ones are taken as often as those that are a little thin."

May 8, 1888, Secretary referred Mr. Martin's report to B. Lambrechts, V. S., of Willmar, and ordered him to investigate, which he did and reports as follows:

Wednesday I proceeded to the town of Sioux Agency, Yellow Medicine County, to examine some sheep belonging to Mr. Williams and others. By post mortem I found the disease very similar to that of the cattle just reported, and send you some specimens from Granite Falls. There were only two sick in a herd of three hundred. The cause of this disease is too crowded stables, which from poor ventilation, become too warm.

Very respectfully,

B. LAMBRECHTS, V. S.

## MONTHLY STATEMENT OF BIRTHS—MARCH, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO MAY 15, 1888).

GRAND TOTAL, 2289		PER CENT	TOTAL	MALES	FEMALES	UNKNOWN
SEX	Males .....	52.74	2289	1209	.....	.....
	Females .....	46.96	.....	.....	1075	.....
	Unknown .....	.22	.....	.....	.....	5
COLOR	White .....	100.	2289	1209	1075	5
	Colored .....	.....	0	.....	0	.....
	Unknown .....	.....	0	.....	0	.....
CONDITION	Legitimate .....	99.08	2268	1196	1067	5
	Illegitimate .....	.83	19	12	7	.....
	Unknown .....	.09	2	1	1	.....
NO. AT BIRTH	Single .....	97.57	2231	1180	1048	3
	Twins .....	2.53	58	29	27	2
	Triplets .....	.....	0	0	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY	Both American .....	23.85	546	288	258	.....
	Both Foreign .....	57.23	1310	699	606	5
	Am'n Father—Foreign Mother .....	5.47	125	67	58	.....
	Foreign Father—Am'n Mother .....	11.05	253	124	129	.....
	Unknown .....	2.40	55	31	24	.....

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF APRIL.

## DISEASES OF MEN.

Diphtheria .....	{	cases, 24
.....		deaths, 12
Scarlatina .....	{	cases, 21
.....		deaths, 1

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for .....	48
Reported during the month .....	27
Killed .....	20
Released .....	8
Isolated .....	9

Remaining May 1st isolated or not accounted for ..... 37

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD. RED WING, MINN.

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VOL. IV. NO. 3.

MAY, 1888.

WHOLE NO. 39.

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BY THE TERMS OF THE LAW THERE SHOULD BE 1504 LOCAL BOARDS OF HEALTH IN MINNESOTA. There are, at date, organized and at work, in mutual co-operation, and with the State Board, 1444 Local Boards of Health. The remainder are delayed by various causes, but will soon be in line.

SMALL POX continues to spread slowly, (see memorandum of last official reports to this Board,) and our own State had two outbreaks in May. At this date, July 5, the last case in both localities has recovered, and there appears no further danger in either place. We repeat the suggestion of last month: *Urge vaccination upon all not yet so protected, and keep a sharp outlook for the first case, which is as likely to appear in the country as the town, Isolate all suspected of the disease, till the truth is known.* Report all action in the matter to this office.

*Humanized vaccine.*—We can supply a limited amount of healthy and active crust, on two conditions: that no charge be made for the virus, and that the product from one healthy babe be sent back for similar distribution.

VITAL STATISTICS occupy more room than we can afford, in this number. Arrangements are now made to print them hereafter as an extra to our regular issue. This is all the more necessary that the returns for 1887 are about ready for publication, and will of necessity occupy considerable space.

MAY INSPECTION RETURNS are coming in, but we must defer the publication of all but a few.

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## SMALL POX—MAY 1 TO JUNE 1, 1888.

DOMINION OF CANADA—*Quebec City*, May 15, 1 case. Had visit of her brother from the United States. Isolated, and exposed quarantined.

MASSACHUSETTS—*Boston*, May 9, 2 cases. *Springfield*, May 9, 2 cases. Origin unknown. Residents.

CONNECTICUT—*Thompsonville*, May 4, 1 case; child. Origin unknown. All precautions taken.

PENNSYLVANIA—*Philadelphia*, reports May 3, 16, 23, 31. New cases constantly occurring.

TENNESSEE—*Memphis*, May 22, 2 cases; colored. Origin not given. Proper precautions taken.

ILLINOIS—*Metropolis*, May 28, 3 cases. Chairman Board of Health has disease, being his second attack.

MICHIGAN—*Detroit*, May 26, 1 case. Origin unknown. Promptly removed to city hospital.

MINNESOTA—*Cambridge*, May 7, 1 case; woman. Recently arrived from Iowa, where she was visited by son, who had just been discharged from pest house in McPherson, Kansas. Case and all exposed isolated, and vaccination enforced. *St. Paul*, May 25, 6 cases and 1 death to June 1. Disease originated from German woman, just arrived in this country. Removed to pest house, and vaccination of exposed enforced.

### VITAL STATISTICS OF MINNESOTA.

Besides the tables of Births and Deaths for April, 1888, we submit a combined table for the first quarter of 1888, showing relative death rate for the months of January, February and March. This is done graphically, and is a fair illustration of the use of that method. The next table is a comparison of the first quarters of 1887 and 1888.

A study of the death rates, by specified diseases for 1888 to May 1st, gives the following conclusions:

*Measles*, increasing. *Scarlet Fever*, increased, with a decline in April. With both diseases cases have been sporadic and few.

*Diphtheria*, increased steadily from March, 1887, till in December there were 136 deaths. 1888 began with 103 cases in January; February had 65; March, 51; and April, 59. A marked and continued decline. As compared with the same months of 1887, see note below.

*Typhoid Fever*: January, 51 cases; February, 33; March, 31; April, 29. The disease increased regularly from February, 1887, to November. Then began a steady decline which continues May 1st.

*Erysipelas and Puerperal Diseases*: Though few cases there is a greater number than in any quarter of 1887.

*Diarrheal Diseases*: Few in number, but more than in same period of 1887.

*Bronchitis*: Not much different from same quarter in 1887.

*Pneumonia*: More deaths than in last quarter of 1887, and more than in first quarter of 1887. (See note below.)

*Deaths from all causes*: First quarter of 1887, 2256; first quarter of 1888, 3484. NOTE.—This difference is more apparent than real, as the returns for the first quarter of 1887 are very deficient, the new law having been approved in March. The same remark applies to the special disease death rate.

### SANITARY INSPECTION REPORTS.

WINONA. (C.) WINONA CO., DR. FRANKLIN STAPLES, H. O., APRIL 9, 1888.—In accordance with law, the Board of Health hereby submits the annual report of its acts and proceedings, and of the sanitary condition of the city, together with a summary of the vital statistics of the year.

The meetings of the Board have been held as required by law, and as often as has been necessary for the sanitary work of the city.

*May Inspection*.—The inspection, required by the law of the State to be made in the month of May, was made, and a report of the same was forwarded to the State Board of Health, and was published.

*Sanitary Inspector*.—One Sanitary Inspector was employed by the Board, with the approval of the City Council, and was on duty from the first day of April to the first day of December. This officer attended to the usual duties of the office and reported daily to the health officer.

*New Ordinances*.—In addition to the sanitary laws of the city previously existing, the fol-



lowing ordinances have been passed during the year: "A general ordinance relating to slaughter houses." "An ordinance to prevent nuisances and to provide for the disposal of offensive matter and rubbish." "An ordinance fixing the limits within which no swine shall be kept."

*Slaughter Houses.*—Owing to the enlargement of the city limits within the past year a second slaughter house, owned and operated by Charles Deering, has been authorized in the First Ward. The slaughter house in the Fourth Ward is still owned and operated by Lamprecht, Keiser & Co. These establishments have been constantly under the inspection of the Board as authorized by law, have been kept in a sanitary condition, and are a credit to the city.

*Disposal of Garbage.*—An arrangement was made, early in the season, for a dumping ground for manure, rubbish, etc., on the ground owned by Frank Johnson, south of the Chicago, Milwaukee & St. Paul Railroad track. Men were employed by Mr. Johnson to receive the dumpage, dig trenches, and carefully cover the same. All contents of vaults and cess-pools, when removed are taken at a distance beyond the settled portion of the city, in the lower end of the Fourth Ward.

There has been some difficulty in compelling occupants of premises to keep the adjoining alleys in a sanitary condition. Oftener than otherwise, however, the nuisances here have been simply obstructions in the shape of ash heaps and manure piles, rather than what might be called strictly unsanitary nuisances. In the disposal of these cases the Health Officer and Street Commissioner have endeavored to co-operate so far as practicable. The time has now come when good public economy warrants the constant employment of at least one team in doing scavenger work for the city, under the direction of the Board of Health.

*Water Supply.*—The condition of the city water-supply has not changed since our last report. The well of the water-works has been frequently inspected, and the water is believed to be of good quality. Chemical analysis of this water and of that of several wells in the city, is soon to be made under direction of the Board of Health.

*City Hospital and City Lock-up.*—The city hospital and pest house remain under the care of Mr. Deertz. It is kept in good order, but no repairs have been made, because it is expected that the hospital will soon be removed to another locality.

The services of the Health Officer as City Physician, has been mostly confined to cases of sickness and injuries of vagrants who have been taken in to the city lock-up, and to a few transient paupers. There have been no injuries to persons while being arrested by the police. The city lock-up is kept in as good a condition as possible with the present arrangement of its cell room and cells, which is not quite up to the demands of the times in the matter of sanitation.

*Improvements in Public Buildings.*—Important improvements have been made during the past year in the public school buildings of the city. Reference is here made to the thorough change and improvement of the old high school building in the matter of heating and ventilation; also to the entire change and complete system of the heating and ventilating of all the departments of the State Normal School Building; also to the complete arrangement for lighting, heating, and ventilating the new high school building. The whole architecture of this building is designed with reference to complete sanitation. It may now be said, much to the credit of our city, that Winona has not one poorly constructed or badly ventilated public school building within its limits.

*Sewerage.*—The rapidly increasing number of vaults and cess-pools around and under business blocks and in the residence portion of the city, and the constant pollution of the surface soil by house sewage, makes the very early establishment of a perfect system of sewerage an urgent necessity. The future health and material prosperity of the city is at stake in this matter.

A private sewer has been recently put in on Center Street, leading to the river; but the city cannot be sewered to any considerable extent in this manner. There is an old wooden, and very defective sewer, on Johnson Street, leading to the river near to the water-works, which must be removed or replaced by a perfect one as soon as possible.

*Diseased Animals.*—In the month of October two cases of glandered horses were reported as existing in the First Ward. The Board of Health ordered an examination to be made by a competent veterinary surgeon, as required by law in such cases, who reported to the Board in due form the full particulars concerning the diseased animals, pronouncing both cases to be that of glanders in advanced stages. The horses were pronounced to be dangerous, and in accordance with the law, were destroyed by order of the Board, and the premises thoroughly cleaned. The facts and action in this matter were duly reported to the State Board of Health.

*Vital Statistics.*—By law of the State, passed March 7, 1887, the Health Officer is made collector and register of vital statistics. One copy of the record of statistics is required to be kept as the property of the city, and another copy is required to be forwarded, monthly to the Secretary of the State Board of Health, to be by him recorded and tabulated in various ways for the use of the State. These statistics in case of births, include date, sex, color, age, and nationality of parents. In case of deaths: date, name, sex, color, age, nationality, occupation and cause of death. Physicians, mid-wives, heads of families and others specified, are required by law, under penalty, to furnish the data for these statistics. The Health Officer is able to say, that with one or two exceptions, he has been very promptly furnished by physicians and others, with the detailed statements for making the statistics required. A monthly statement of the City's mortality has been published, as required by city ordinance, in the official newspaper of the city.

During the year beginning April 1, 1887, and ending April 1, 1888, there were in the city 748 births: males, 389; females, 359. In the same time there were 316 deaths: male, 182; female, 134.

There has been no epidemic of contagious or infectious diseases. Thirty-one cases of scarlet fever reported, with only two deaths. Here is a chance for suspicion of error in the correctness of the report. Cases may have been reported as scarlet fever which were not genuine. Six cases of diphtheria were reported, and three deaths. Twenty-six deaths are reported from membranous croup; possibly diphtheria should have figured some in this number. Only one death from typhoid fever has occurred. These cases of the contagious and infectious diseases have not seemed to occur especially at any one time or in any particular locality, but have occurred somewhat sporadically. During the past winter several cases of acute inflammation of the throat have occurred, with some cases of bronchitis and pneumonia. There have been a few cases of erysipelas and puerperal inflammation. The character and severity of the winter will account for some of these diseases. It cannot be seen that any of them can be traced to local causes.

AUGUSTA TP., LAC QUI PARLE CO., H. M. BELL, C. B. S., MAY 21, 1888.—Work of spring cleaning is progressing. Farmers have nearly finished, but citizens of Marietta Station are a little behind. Slough existing there will be thoroughly drained. Contains water only at times.

BROWNSVILLE, (V.) HOUSTON CO., DR. J. M. RILEY, H. O., MAY 31, 1888.—Unusual fall of rain has delayed "cleaning up." Orders of Board in the matter have been complied with as far as possible. High water in Mississippi River has prevented draining of railroad dump. This will be done as soon as water subsides.

CLEARWATER (V.), WRIGHT CO., DR. J. D. WHELOCK, H. O.—General condition of streets and alleys, fair. Some vacant lots contain heaps of rubbish, and these also exist on the banks of the river, being accumulations of years. A dumping ground outside village limits should be provided. These accumulations of garbage and excreta are directly connected with contamination of our water supplies; but few wells in the vicinity of these contain pure water. Recommend that water from these wells be examined, at slight expense, and under supervision of Board. Also that our Board order general cleaning up, and have our order include the abolition of the "hole-in-the-ground," and the substitute of the above ground dry-earth closet. Would recommend thorough investigation of sanitary condition of our school buildings and premises. This is made urgent by outbreak of diphtheria in our school last winter.

ELBOW LAKE, (V.) GRANT CO., DR. F. A. ROBINSON, H. O., MAY 23, 1888.—Issued orders May 1st, to "clean up."—Complied with, except in one case, where a cellar existed on vacant lot and filled with water. Board ordered this filled with dirt, but owner refused to obey. We then placed matter in hands of City Attorney, who persuaded owner to comply with our orders. Recommend the draining of slough within village.

GLYNDON (V.), CLAY CO., DR. E. W. LOVELL, H. O.—Village in good sanitary condition. Manure and rubbish heaps cleaned up and hauled away. Cellars cleaned and whitewashed. Privies are mostly of the box sort, with some "holes-in-the-ground." Water supply from deep wells, and quality good. Ventilation of school house, imperfect. Prevailing diseases, pneumonia, bronchitis and quinsy. *Recommendations.*—School house be properly ventilated. Man employed to cut weeds in village.

GAYLORD (V.) SIBLEY CO., DR. D. N. JONES, H. O., MAY 17, 1888.—Sanitary condition good, better than ever before. Some nuisances still exist, which will be removed. No epidemic diseases, but occasional outbreak of measles and scarlatina.

## MONTHLY STATEMENT OF BIRTHS—APRIL, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO JUNE 15, 1888).

GRAND TOTAL, 1880		PER CENT	TOTAL	MALES	FEMALES	UN- KNOWN
SEX	Males .....	52.32	1880	1036	.....	.....
	Females .....	47.48	.....	.....	940	.....
	Unknown .....	.20	.....	.....	.....	4
COLOR	White .....	99.95	1979	1036	939	4
	Colored .....	.05	1	.....	1	.....
	Unknown .....	.....	.....	.....	.....	.....
CONDI- TION	Legitimate .....	99.09	1962	1027	931	4
	Illegitimate.....	.91	18	9	9	.....
	Unknown .....	.....	.....	.....	.....	.....
NO. AT BIRTH	Single .....	97.83	1937	1018	915	4
	Twins .....	2.02	40	17	23	.....
	Triplets .....	.15	3	1	2	.....
PARENT NATIVITY	Both American.....	26.92	533	267	266	.....
	Both Foreign .....	55.	1089	576	510	3
	Am'n Father—Foreign Mother.	4.65	92	55	37	.....
	Foreign Father—Am'n Mother.	10.40	206	100	106	.....
	Unknown .....	3.03	60	38	21	1

TABLE SHOWING COMPARATIVE MORTALITY OF CERTAIN DIS-  
EASES IN JANUARY, FEBRUARY AND MARCH, 1887-1888,  
AND FOR THE FIRST QUARTERS OF THOSE YEARS.

	JANUARY		FEBRUARY		MARCH		FIRST QUARTER	
	1887	1888	1887	1888	1887	1888	1887	1888
MEASLES.....	4	5	17	8	27	14	48	27
SCARLATINA.....	17	11	26	14	27	17	70	42
DIPHTHERIA.....	59	103	48	65	28	51	135	219
CROUP.....	18	15	21	25	13	27	52	68
WHOOPING COUGH.....	2	5	1	2	3	9	6	16
TYPHOID FEVER.....	37	51	15	33	19	31	71	115
PUERPERAL DISEASE.....	22	23	29	31	28	42	79	96
PHTHISIS.....	56	95	60	94	90	108	215	297
BRONCHITIS.....	37	47	31	32	40	53	108	132
PNEUMONIA.....	56	95	57	96	68	108	181	269
MENINGITIS.....	25	39	22	55	35	61	82	155
INFANTILE DEBILITY.....*	88	102	86	85	97	127	271	314

\* Includes children under one year, cause of death not specified, or reported as unknown.

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF MAY.

## DISEASES OF MEN.

Diphtheria.....	{	cases,	42
		deaths,	20
Scarlatina.....	{	cases,	10
		deaths,	2

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	37
Reported during the month.....	26
Killed.....	18
Released .....	1
Isolated .....	9

Remaining June 1st isolated or not accounted for ..... 44

NOTE.—Most of these are cases exposed, and isolated for further observation.





OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO JUNE 15, 1888).

Per Cent of all deaths during the month	SEX		SOCIAL STATE		AGE													NATIVITY			PARENT NATIVITY			Localities invaded	Counties											
	Male	Female	Single	Marr ed	Widowed	Unknown	Under 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	5-10 years	10-15 years	15-20 Years	20-30 Years	30-40 Years	40-50 Years	50-60 Years	60-70 Years	70-80 years	Over 80 years	Unknown	City, Village or Tp.			Other Minnesota	Other United States	Foreign	Unknown	Both American	Both Foreign	American Father Foreign Mother	Foreign Father American Mother	Unknown		
2.32	15	15	10	10			6	5	2		1	1	1										9	4	1	1		4	10			1	8	8		
.47	3	2	2	3																			2	2	1			3	3				4	4		
5.48	38	38	38	38			3	7	5	3	5	9	4	1									12	22	4	2		9	25			1	26	21		
1.58							1	3	9	3	1	3		1									1	3	1			7	18			2				
.83	5	5	5	5			2	2	1														1	3	1			1	3	4			10	10		
2.69	19	10	8	2			1					1	1	2	4	5	4	1					2	5	6	1		1	13			4	5	5		
1.77	7	4	1	1			3	1							3	3							1	3	2	2		3	3				15	15		
3.81	41	2	39											18	16	7							5	7	29	4	32					5	29	22		
1.02	6	5	5	3			2	3				1	1	2									3	1	1	1	1	2	1			2	10	9		
.37	3	3					2	1															3	1				2	1				3	3		
4.65	28	27	15	7			11	5	6	3	1	1	3	2	2	1							17	6	7	2		9	13			4	24	21		
.93	8	3	5				5	1	1		1	1											2	1	3	3	1	2	5			1	10	7		
1.30	6	8	6	2			2	1								2	2	2	1	3			3	3	2	6		1	2			3	8	8		
7.71	34	16	13	2			2	3	1		1	5	11	12	5	4	3	1					3	7	10	14		7	20			5	43	33		
1.86	9	9					2	1	4		1			1									5	1	1	2	2	2	3			2	11	9		
1.21	4	2	2	1										2	1	1	1	3	1				1	1	5	1	1	1	2			1	8	8		
1.02	7	4	2	2										2	1	1	1							4	3	2		2	2			3	2	2		
3.81	22	9	12	1			3	1				1	1	2	2	5	2	1	7	4			1	4	1	6	10	1	4	13		5	18	16		
4.65	34	32	1				1	25	7	5	2	1			1								22	4	5	3	4	8	19			3	4	14	13	
10.13	67	48	16	1			2	21	6	3	1	8	1	3	8	3	3	1	7				24	11	14	19	2	15	39			2	4	56	37	
4.65	26	16	9	1			7				1	2	2	2	3	2	5	1					3	5	4	13	1	2	13	19		3	4	27	23	
1.11	9	2	6	3			1							1		2	3	2	1				1	1	5	2	3	2	4			1	2	8	8	
5.58	36	36					36																35	1				5	27			1	2	32	25	
8.55	57	57					57																49	14	1	1	1	1	12	33		3	2	7	50	35
5.48	37	35					35																25	8	1	1	1	9	17			2	5	4		
6.70	42	37					27	9			1	1											23	9	3	1	1	6	25		1	3	2	30	22	
3.16	25	5	24	12			13	5	1	1													11	30	10	20	5	1	7	23			12	58	39	
7.16	40	13	8	19			3	3	1					1	4	1	3						2	1	2	2	15	2	1	17			7	18	18	
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22	12	2		1	6	2	1	7	24	1	5	29	7	18			
.....	587	480	282	419	26	16	126	48	21	10	25	15	25	44	30	28	40	27	31	16			7	24	61	38	16	11								
.....	480	282	104	126	36	77	23	29	22	9	21	24	23	65	56	30	17	22	22																	

TABLE SHOWING RELATIVE DEATH RATE BY SPECIFIED DISEASES FOR THE FIRST QUARTER OF 1888, BY MONTHS.

	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	TOTALS		
																	January	February	March
Measles.....																	5	8	14
Scarlatina.....																	11	14	17
Diphtheria.....																	103	65	51
Croup.....																	16	25	27
Whooping Cough.....																	5	2	9
Typhoid Fever.....																	51	33	31
Erysipelas.....																	9	14	32
Puerperal Disease.....																	23	31	42
Diarrhoeal Disease.....																	16	21	21
Meningitis.....																	39	55	61
Rheumatism.....																	6	8	3
Cancer.....																	20	23	31
Phthisis.....																	95	94	108
Other Tubercular Diseases.....																	21	14	20
Apoplexy and Paralysis.....																	27	31	21
Insane.....																	14	9	8
Heart Disease.....																	52	35	38
Bronchitis.....																	47	32	53
Pneumonia.....																	95	95	108
Enteritis.....																	32	47	60
Diseases of Urinary Organs.....																	21	18	18
Still Birth.....																	51	47	59
Infantile Debility } Premature Birth }																	102	85	127
Infantile Convulsions.....																	31	52	65
Old Age.....																	96	102	96
Violent Deaths.....																	63	62	32
Unknown.....																	61	48	31

JANUARY

FEBRUARY

MARCH

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

CIRCULATION, 2,100 COPIES.—SUBSCRIPTIONS, FIFTY CENTS PER ANNUM.

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JUNE, 1888.

WHOLE NO. 40.

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**HUMANIZED VACCINE.**—The supply sent to us for distribution is not sufficient for the demand. Health Officers to whom we have sent a crust with the understanding that a fresh crust from a healthy infant be sent in exchange, will please remember that others are as urgent as many of them were, for virus, and that we are dependent on our brethren for the supply, at present. Send what you can spare and vouch for.

**WATER ANALYSIS.**—Work is now in progress in our Laboratory on the public water supply of the cities of Crookston, Duluth and Rochester, and on samples from several suspected wells. A new form of application has been prepared, to be mailed to the Secretary, when samples of water are sent. It may be obtained at this office, or through Local Boards.

**PLANS FOR EARTH CLOSETS** promised at the Conference, are now in the hands of the engravers, and will be printed in our next number.

**THE SANITARY CONFERENCE AT ROCHESTER** was a success in attendance; in the variety, and interest of the discussions; in the popular meetings at the Opera House, and in the hearty interest of the delegates. Though three days and evenings were given to the business in hand, much was left undone and we obeyed the old injunction as to food, "to leave the table hungry." The hearty expressions of satisfaction on the part of the delegates were frequent and emphatic, leaving no doubt that these Conferences meet a real need.

The peculiarity of the Minnesota method has always been that the day meetings are of official representatives of Local Boards of Health, and the discussions limited to questions directly concerning their work. The reason for this is the policy which was adopted by the State Board after we had secured most of the existing legislation. It is to cultivate, in all proper ways, the efficiency of the Local Boards, and to increase the popular appreciation of their duties by insisting upon their faithful performance, and the selection of competent Health Officers. The efforts of the

Health Officer of Rochester and his associates were constant and zealous. To them the capital success of the Conference was to a considerable extent due. The popular evening meetings were supplied with a variety of valuable addresses by the kindness of gentlemen prominent in other departments of work, Prof. Folwell of the University, Prof. Rankin of the Owatonna Public Schools and other teachers, clergymen, and physicians. The notable paper of Dr. Hansen of Norway, and his novel presentation of the theory of infection versus heredity was the scientific feature of the Conference. By the courtesy of Dr. Mosse we have secured copies of his newspaper account of the Conference for distribution to Local Boards, and publish it as an extra to this number of PUBLIC HEALTH. It does not profess to do more than sketch the proceedings, and it is impossible to revise it thoroughly before publication, so that some inaccuracies have escaped correction. They do not effect the value of the report as a whole, which is well worth reading.

**L**EPROSY.—We submit herewith the paper read, at our request, by Dr. G. Armauer Hansen of Bergen, Norway, at the Rochester Sanitary Conference. It is a brief but authoritative statement, by one who has won the right to be heard when writing on a subject to which he has devoted his professional life. Dr. Hansen discovered the bacillus of Leprosy which is now universally associated with his name, and the deliberate statement of his belief that the disease, as known in Norway, and Minnesota, is infectious, not hereditary, and infectious in the manner he describes, will have great weight in determining the belief and practice of those who have to deal with Leprosy in this country.

#### DISEASE DISTRIBUTION AND MORTALITY FOR MAY, 1888.

**F**OR MAY, there were reported to the Secretary of the State Board of Health, 1100 deaths from 524 localities in the State. As will be seen by reference to the tables published herewith:—

*Measles* caused a mortality double that of April. It is moderately epidemic, having occurred in twenty-three localities, in twenty-one counties, as compared with April having eight localities in eight counties.

*Scarlatina* holds its own with an increase in distribution.

*Diphtheria* shows a gratifying diminution in mortality and distribution, though the infectious disease returns for June (later than these) seem to indicate a renewed activity.

*Croup*, less, but not so marked a diminution as diphtheria, or as might be expected at this season.

*Typhoid Fever*, steady and gradual reduction of mortality, but a wider distribution of the disease.

*Erysipelas*, steadily less.

*Puerperal Diseases*, reduced 50 per cent in mortality and distribution.

*Phthisis*, increased mortality, seventy localities report deaths, as compared with forty-three in April. Distribution double that of last month.

*Bronchitis*, increase both in mortality and distribution.

*Pneumonia*. May 120, April 109. Monthly average of first quarter of the year ninety-nine. Distribution less. More than one half the deaths (73) in St. Paul and Minneapolis.



*Unknown and Unclassified* is getting less, being now but a small part of the total. No item is more closely watched in the office, as its proportion is a sort of test of the thoroughness of the work.

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SMALL POX IN UNITED STATES—JUNE 1 TO JULY 1, 1888,

PENNSYLVANIA—*Philadelphia*, June 14, 21 cases since June 5, with 3 deaths.

TENNESSEE—*Memphis*, June 12, 6 cases, 2 deaths. All colored and in same vicinity.

MISSOURI—*St. Louis*, June 30, 17 cases, nearly all colored. *Moberly*, June 30, 10 cases, introduced by Swiss immigrant.

ILLINOIS—*East St. Louis*, June 7, 11, 12 and 21, 7 cases, 1 death. Introduced by negro exposed in *St. Louis*.

IOWA—*Toledo*, June 28, 1 case.

WISCONSIN—*Lake Mills*, June 18, 1 case.

MINNESOTA—*Cambridge, Isanti County*, 2 cases varioloid, last of original outbreak. Have recovered, and more than two weeks have gone and no more cases. *St. Paul*.—Of cases remaining, one died from other cause than the disease. June 14th, a case reported, result of first outbreak. It has recovered. At this date (July 24th), not a case of any form of Small Pox in the State.

CALIFORNIA—*San Francisco*, June, 11 cases. *Los Angeles*, number of cases not given. Nearly all imported. For the first time in ten months no deaths reported in State.

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THE IMMUNITY SECURED FROM SPECIFIC DISEASE BY THE INOCULATION OF ITS VIRUS DEPRIVED OF LIVING ORGANISMS.—The experiments in this direction are more and more encouraging. They have been limited, mostly, to the diseases of animals, but a few have been made upon the virus of certain diseases of men. There are two methods of getting rid of the bacteria—in one, they are removed by a porcelain filter; in another, they are destroyed by heating the fluid containing them to at least 120 C. (248 degrees F.). MM. Chantemesse and F. Widal (we translate from an abstract of their report in the *Annales de Pasteur* for February, 1888, in the *Revue d'Hygiene*, for June, 1888) have made similar experiments with the culture fluid of the typhoid bacillus. They inoculated thirty mice in the peritoneum, with three or four drops of a peptonized soup (bouillon), which had, three days before, been planted with the virulent bacillus of typhoid fever, from the spleen of a patient having the disease. The cultivation was kept at about 37 degrees C. Thirty-six hours after the inoculation, all the mice were dead. The intestines were full of diarrhoeal fluid, Peyer's patches were tumified, the spleen was enlarged; both it and the marrow of the bones, contained typhoid bacilli. They injected, for several days, into mice a half centimetre of the same culture fluid, but deprived of all living contents, either by filtration through porcelain, or by a temperature of 120 degrees C., for ten minutes. Nearly all of these, whom they inoculated afterwards with the original culture, survived. These experimenters believe that the immunity thus obtained was due to the introduction, into the body, of an alkaloid (ptomaine) which Brieger has isolated from typhoid bacilli cultures and called typhotoxine. The bacillus of typhoid fever cannot live in the body of a living animal impregnated with typhotoxicon. This last is derived not only from the life of the bacillus of typhoid in an artificial culture, but may come from the life of the same bacillus in the body itself, and we might secure immunity by the injection in successive, and progressive doses, of minimum

quantities of the virus itself. They conclude that the immunity so obtained has two factors: (1.) The impregnation of the fluids of the body by a soluble product of the life of a microbe which is an antiseptic as respects that microbe. (2.) The resistance of the cells of a living organism to the, more or less, toxic influence of this ptomaine. How important if true! As Dr. Vallin happily remarks in concluding the review, "All these experiments open a new way to the prophylaxis of infectious diseases. There still remain many obscurities and doubts; but the field is rich in promises and it is our duty to call these facts, in a very brief way, to the attention of those who are interested in hygiene and prophylaxis."

**L**EPROSY IN HAWAII.—The biennial Report of the Board of Health (March, 1888), of the kingdom, is just at hand, by the courtesy of its President. The great problem which confronts this Board, is the Leprosy question. The disease was first recognized in 1840. It was reported in 1864, when about sixty in the same district were believed to have it. In 1868, as many as 274 on the different islands were reported affected. "Since then, Leprosy has made fearful strides." By the tabular statement (p. 10) there were, in March, 1888, 749 persons at the Leper settlement, (males, 495; females, 254). During the two years there had been 225 deaths, in a total of 974 Lepers there. The Board estimates the number of Lepers at large, at 544 (p. 12), so that in March, last, there were at least 1723 Lepers in the kingdom. Isolation of Lepers is evidently very imperfectly carried out. "The greatest obstacle to be overcome in carrying out the law of segregation, consists in the fact the Hawaiians themselves do not appreciate, and refuse to be convinced, that Leprosy is a communicable disease, that the Leper is unclean, and should be shunned as the bearer of a deadly contagion." Our readers will remember that Dr. Gronvold reviewed the previous report of the Hawaiian Board of Health, (for 1886,) and quoted the favorable opinion there expressed of the Japanese treatment then on trial (by Dr. Gotto). The present report, after two years trial, states that "while not feeling called on to deny that the empirical efforts of the Japanese, practiced by Dr. Gotto and others, may have proved of benefit in some cases, still the proof is lacking that cure has been attained in any case." The Board, having heard of successful treatment by a Hamburg physician have made propositions to him for the trial of his method. Taken altogether, the tone of the report on Leprosy in Hawaii, is that of discouragement. We have submitted it to Dr. Hansen, and hope for a brief criticism, and a resume of his last investigations as to the Norwegian variety of the disease, or which he wrote so hopefully in the February and the present numbers of PUBLIC HEALTH.

**T**HE MORTALITY OF LONDON IN 1887.—The population was 4,216,192. The birth rate was 26.1 per 1000; the death rate 19.3 per 1000. The mortality by zymotic diseases was as follows:

Small pox, 9; measles, 2893; scarlet fever, 1431; diphtheria, 951; whooping cough, 2928; typhus petechial, 9; typhoid fever, 587; undefined fever, 48; diarrhoea, 3762. Total from zymotic diseases, 12,627 (3 in 1000 of all living). The proportion of deaths under one year of age to births, was 158 to 1000. For the decennial period, 1877—86, it had been 152 to 1000.

*LEPROSY IN NORWAY, AND ITS IMPORTATION TO THE  
UNITED STATES.*

G. ARMAUER HANSEN, M. D., SURGEON IN CHIEF OF LEPER HOSPITAL, BERGEN, NORWAY.

WE do not know exactly what time Leprosy first made its appearance in Europe, but we do know that in the mediæval times the disease had spread everywhere. Since then, it has disappeared almost everywhere, but in Norway, in some parts of Spain, and Italy. We find it also occasionally in Russia, and the Turkish Empire.

Civilization has made gigantic progress in the last centuries, and many people consider this to be the real cause of the disappearance of this disease. They claim that the causes of Leprosy are filth and poor living, and that modern civilization has diminished these two causes, and, consequently, indirectly acted to stop the disease. But we must also remember, that the fear of the disease in England, France, and Germany, was so great, that the Lepers were obliged to live apart from society. They were obliged to live in special Leper houses, and were not allowed to go out therefrom, unless they carried, and constantly rung, a bell, that people might hear them approaching and fly their presence. Now it seems to me, that this vigorous isolation of the sick must have prevented the transference of the disease, and must be the real cause of the disappearance of it.

We need not go back to antiquity, to learn how the disease has spread. We have in Norway, in later years, an extensive experience in that direction, which all goes to prove that the disease only spreads by Lepers coming in contact with people not afflicted with the disease. I will now give you a short account of our experience with Leprosy in Norway:

The disease was steadily increasing there until the year 1856. We had, until that year, only two hospitals for Lepers in Norway—the St. George's Hospital, and the Lungaards Hospital, erected in 1848. But in 1856, we built a new home for Lepers near Bergen, with a rooming capacity of 280. In 1860, and 1861, we added two more hospitals to the list—one at Molde, and one at Trondhjem. In all, our five hospitals could accommodate 700 Lepers. In 1856, we had 2871 Lepers in Norway, and it was in this year, that a more systematic and extensive isolation of the sick was put in force. From 1856 to 1860, 589 Lepers entered our hospitals; from 1860 to 1865, 736; and from 1865 to 1870, there were 584 Lepers who entered. This diminution of entries was because of the diminished number of cases then in Norway. Up to the year 1860, all our institutions were full; and from that year we date the decrease of Lepers in Norway.

That the decrease is considerable, you will understand, when I quote the following figures to you: Norway had, in 1860, 2208 Lepers; in 1865, 1865 Lepers; in 1870, 1533 Lepers.

This last figure is too small; but I have not at hand the latest statistics. The above quoted figures are taken from statistics issued in 1872, for we cannot give the exact number of cases of Leprosy in one certain year, until about ten years after the year in question. I dare not say that this depends on the long incubation of the disease; but I would rather say, it depends upon the fact that Lepers do not know themselves to be Lepers before five or more years after they have contracted the disease. A good illustration of this, is the case of a Dutchman, who had lived in the West Indies for several years. Ten years after his return to Holland he became a Leper. There can be no doubt, that the man caught the disease in the West Indies, and was a Leper when he left there; but it took him ten years to discover the fact. This fact makes the inquiries into the etiology of Leprosy very difficult. It is hard, if not impossible, for a person to remember what people he had come in contact with ten years previous.

But let us return to the statistics. You have seen that Leprosy decreased considerably between the year 1856 and 1870. The decrease has since that time gone on at the same rate, if not still faster. At the end of 1885, we had in Norway, if I remember correctly, about 1100 Lepers, and of this only 672 were



outside the asylums. It can be further shown, that the decrease of the disease is not the same in all parts of Norway. There is, especially, one part of Norway, Nordmire, where Leprosy is at a standstill, and where no decrease can be noticed. By inquiring into the causes hereof, I found that from this part of the country very few patients had entered our asylums. On the other side, in those parts of the country where the disease was most frequent, the entries had been the largest, and the decrease, in consequence, the greatest. The entry in our asylums is not obligatory. It depends on the patients themselves, if they wish to enter or not. You have seen from the previous statistics, that a very large number, almost 50 per cent, have entered, and, consequently, have been isolated from society. I need not go further in detail to prove that this extensive isolation is the real cause of the decrease of leprosy in Norway.

Leprosy has, until the last ten or fifteen years, always been considered a hereditary disease. This is very natural, as Leprosy generally follows individual families from generation to generation, and you would seldom meet with a case of Leprosy where you could not prove that some other member of the same family had been afflicted with the same disease. This is not only the case in Norway, but wherever we find Leprosy, and it naturally leads to the conclusion that the disease must be a hereditary one.

But we have cases of Leprosy, where we cannot trace the disease back to the family, as in the case of the Dutchman, who had contracted the disease in the West Indies.

In Norway, about one-fifth of all cases are individual, where you cannot trace the disease back to the patient's family. Now there must be a cause for these cases, and here comes the question, Is not that cause the same as of those cases hitherto presumed to be hereditary?

I think I can best explain what I mean by an illustration from my own practice in Norway: On the east side of a sound, there were three farms, and all three farms were run by different branches of the same family. Every man, woman or child on those farms belong to the same family. On the west side of the sound, were also three farms, but here there lived six different families. (Farms in Norway are built like small villages, often inhabited by three or four families, or households). On the east side, there were eight cases of Leprosy, and, of course, all kindred and presumed to be inherited, as they all belonged to the same family. On the west side there were six cases of Leprosy in six families, and of these there were not two cases in the same family. All but two of them had leprous kindred elsewhere—but these last two had no leprous kindred at all. On the east side of the sound, the disease was a family disease, and inherited because there was no one to catch the disease but the members of the same family. On the west side the disease was not a family disease, consequently not inherited. How did these persons catch the disease? In my opinion this can only be explained by assuming that the disease is *contagious*.

I have met with families of which only those members became leprous, that had immigrated to places where Leprosy prevailed. The members that remained at home did not catch the disease.

If, now, my theory is correct, and the disease a contagious disease, then comes the next question, How does the contagion spread? About this we do not know anything, with certainty, and we can only come to approximate results by studying how those people, who afterwards became Lepers, lived before they caught the disease, under what circumstances, with what people, etc.

In Norway, the spread of the disease is partly due to the want of cleanliness among our peasants, and partly due to the manner of intercourse. The peasants on the west coast of Norway, where Leprosy is prevalent, are mostly very poor people. They cannot afford the luxury of having a bed to each individual, but that piece of furniture has to accommodate two and three, and sometimes more people at the same time. As Leprosy has been considered not contagious, but only hereditary, no one has been afraid of sleeping in the same bed with a Leper, or using the same spoon, knife or fork as they, without previous washing. The peasants of Norway used not to be too particular about washing



themselves, or anything else, in former days. And when it is taken in consideration that the lips and tongue of Lepers are very often covered with ulcerating leprous tubercles you can easily understand, that the disease can be transferred.

Where such circumstances do not exist, I do not think that there is any great danger of the disease spreading, if there is any at all. If people wash themselves and take the least care of themselves, when they come in contact with Lepers, I do not think there is any danger whatsoever. It is a remarkable fact, that not one of the nurses or servants in our asylums has caught the disease, although they daily wash and dress the patients.

The contagiousness of Leprosy must be regarded as being of very nearly the same nature as that of syphilis, though Leprosy, no doubt, is not as easily transferred. As far as I know, hitherto, there is not a single example of Leprosy spreading here in America, and if the disease is not a hereditary one, you ought not to have any fear that the Lepers emigrated from Norway will spread the disease here.

### SANITARY INSPECTION REPORTS.

GRANITE FALLS (V.), YELLOW MEDICINE CO., DR. F. J. CRESSY, H. O., MAY 2, 1888.—Survey completed. Block 14, Lot 4, basement of meat market and house filthy. Lot 7, basement used as stable during winter should be cleaned. Garbage heaps on river bank should be removed. Blocks 20 and 21, water should be analyzed, and manure removed. Block 22, bad; water contaminated by surface drainage; large manure heaps and alleys filthy; Main alley should be graded and graveled part of length. Private alley, part of Lot 3, should be graded, graveled and drained. Blocks 23 and 24, manure heaps in alleys should be removed and kept clean. Alley and rear of Lots 4 and 5, should be drained; as should also Block 28, protecting well on Lot 20, being public well. Block 25, vacant. Blocks 26, 27 and 28, water should be analyzed and manure removed. Block 29, manure should be removed and alley kept clean; sidewalks need repairing; water should be analyzed. Block 30, manure to be removed and water analyzed. Block 31, Lot 7, should be drained; large manure heaps. Block 32, well on Lot 20 should be analyzed. Block 37, sidewalk to be repaired, and platform built for well on Lot 20. Blocks 38, 39, 40, 41 and 42, large manure heaps; water should be analyzed; low place in Block 39 should be drained. Pillsbury Second Addition, many manure heaps; well water needs analyzing. All privies in city are "holes-in-the-ground," many shallow and filthy. Most cellars contain water.

TUKUA TP., BIG STONE CO., WM. NASH, TP. C., May 3, 1878.—Committee of Board of Health have made inspection, and report sanitary condition excellent. Very few in town have been vaccinated at all, or recently. This should be attended to. (June 5, Secretary sent crust of virus for use in this town.)

LAKE CRYSTAL (V.) BLUE EARTH CO., DR. W. R. CULLEN, H. O., MAY 19, 1888.—Sanitary condition fair. Some nuisances still exist, especially "hole-in-the-ground" privies, which are nearly full. These I hope the Board will order abated at once. Some manure and garbage heaps remain, owing to wet season could not be removed. These the Board should order removed by June 1st. No epidemic diseases during year except mumps, of which he had one hundred cases; a few cases of measles. Four deaths during the year, all from non-infectious diseases. Citizens willingly comply with orders of Board. Hope by June 1 to have village in good sanitary condition.

HAWLEY (V.), CLAY CO., W. TANNER, ACT. H. O., MAY 31, 1888.—"Cleaning up" well done. Citizens are supporting the Board of Health. Late spring has retarded work. No sickness.

ST. PETER, (C.) NICOLLET CO., G. W. MCINTYRE, M. D., H. O., JUNE 1, 1888.—The spring inspection of this city, develops the fact that, in some respects, the city is not in as good sanitary condition, as is usual at this season. The alleys, generally, are mnddy and in many places actually blockaded with piles of manure and other rubbish. This is doubtless owing to the late spring, and the unusual amount of rain during April and May. During the short intervals of dry weather it has been difficult to get teams to remove it, as they were employed at other, and more agreeable, work.

Our streets are in good condition though somewhat mnddy. A survey has been made for the purpose of establishing a uniform grade and ultimately improving the drainage.

A new drain has been laid from the pond between Washington Avenue and Fifth Street, south of Gorman Park. A similar drain is very much needed, from the pond north of Minne-

sota Square. Mulberry street should be graded, so as to drain the low ground near the German Lutheran church.

After making a thorough test of Pettis Lake, it was adjudged unsuitable as a source of water supply, and abandoned. It has been decided to take water from wells near the river, and throw it back into a large reservoir, on College Hill, from which distributing pipes will be laid. Bonds have been voted, the general plan completed, and a site for the pumping station has been purchased. It is expected that the work will be carried to completion as rapidly as possible.

At present the only water supply is from wells. Most of these are shallow and contain nothing but surface water. Dr. Hewitt, Secretary of State Board of Health, kindly analyzed six samples of water for me, which were selected from as many different wells in various parts of the city. Two, were pronounced of excellent quality; two more, were fair, and the other two, were considered unsafe for domestic purposes. It is probably unnecessary to state that water, taken from wells in the higher parts of the city, and where there was least chance for surface contamination, were found to be purest.

The "Ruttan System," of heating and ventilating, has been put into the High School building, since my former report. I believe it works satisfactorily, but during the wet weather, this spring, water ran into the basement of the building and interfered quite seriously with its action. An effort will be made during the summer to prevent a recurrence of that trouble. The same system in the Lincoln School has proved eminently satisfactory.

The directors of Gustavus Adolphus College, intend to put in a new system to heat and ventilate their main building, this summer, as the old method has not proved satisfactory. Otherwise the building and grounds are in excellent condition.

The jail and lock-up are as clean as perseverance with soap and water can make them; but the ventilating arrangement, for the closets, is not what it should be. A radical change should be made immediately. I would suggest building on an annex, sufficiently large for the closets, and then removing them wholly from the corridors.

From May 31, 1887, to June 1, 1888, there have been 75 births in the city, of which number 38 were boys and 37 were girls. During the same period there were 49 deaths, exclusive of those in the hospital for insane. Of those 49, 30 were males and 19 were females.

During the above year, we have had 23 cases of scarlet fever. Most of them were reported as very mild in character. It appeared in nine families. There were but four deaths, and most of those were due to complications. We have also had 12 cases of diphtheria in the same time, 3 of which resulted fatally.

Complaints of nuisances have been made in thirteen instances. Four of those nuisances were piles of stable manure, four were filthy hog-pens, one was a stock-yard, two were privies, and two were carrion. In this connection I wish to call your attention to the necessity of providing a suitable place for the burial of dead animals. The lot should be at a safe distance from the city, and on ground sufficiently elevated, so that high water cannot be given as an excuse for neglect of duty. A place should also be provided for the disposal of other garbage. The vacant lots east of the river, which are used for that purpose now, are too close to residences. The refuse dumped there is often a cause of disgust to people passing on that street.

LE SUEUR, (V.) LE SUEUR Co., DR. W. H. FISHER, H. O., MAY 31, 1888.—Unusual rainfall has delayed work of "cleaning up." High school building in good condition and well ventilated. Grounds clean. "Hole-in-the-ground" privy has been cleaned and lime used freely. Board advised dry-earth closet, and will insist on it. Health officer met School Board concerning this change. Some cellars damp, but the majority have been cleaned and well aired. Published notice to whitewash cellars and deposite lime in corners, which has been complied with in some cases. Body of cow buried in city lot fifteen feet from well where large number of families procure water, was complained of, and immediately removed at expense of the owner. A nuisance between two buildings and under stairway, caused by deposits of filth of all kinds for past six years, has been abated, and the place nailed up. An alley for three blocks was very filthy, containing manure and garbage heaps, has been cleaned. This alley is low and muddy and should be raised, and no manure allowed to be deposited there. A few loads of manure remain. Some of our most prominent citizens are negligent. Location of wells good, and water of good quality as far as known. Railroad stock yards were filthy, but were immediately cleaned on order from Health Officer. Seven cases scarlatina in May, 1888. No deaths. Only contagious disease. Physicians are prompt in reporting infectious diseases, births and deaths to the Health Officer. Citizens and Council are willing to obey sanitary laws.

HERMAN TP., ST. LOUIS CO, GOTTELEIB FRITZ, TP. C., MAY 14, 1888.—Local Board of Health met to-day and reported sanitary condition of town, which is first rate.

KENYON, (V.) GOODHUE CO., DR. G. H. OVERHOLT, H. O., MAY 29, 1888.—System of sewerage much needed. Cellars contain water. Dry-earth closet should be substituted for "hole-in-the-ground," now in use. Water supply contains surface drainage and is in many cases impure.

NEW ULM (C.) BROWN CO., DR. O. C. STRICKLER, H. O., MAY 31, 1888.—Wet season has delayed spring cleaning. City healthy. Infectious diseases immediately isolated, which prevents spread. Have had diphtheria for years past, with fearful mortality. In 1887, had thirty cases and twenty-two deaths from the disease. Since January 1, 1888, have had three cases with one death, compared with twenty cases during corresponding period last year. These admirable results are due to promptness of physicians in reporting infectious diseases, and the help of citizens in isolation, etc.

LAKE BENTON, (V.) LINCOLN CO., DR. W. WAKEFIELD, H. O., MAY, 31, 1888.—Gave notice through local newspaper to clean up. Whole Board made inspection. Streets and alleys not in good sanitary condition, owing to some extent to the wet weather. Draining by open ditches not sufficient. Would call attention of Council to importance of dumping ground outside of city limits. Condition of privies "hole-in-the-ground," is bad, contents not removed or disinfected. Water supply from wells, and good quality. Public buildings in good condition. No epidemic diseases except measles.

WARREN (V.) MARSHALL CO., DR. G. S. WALTAM, H. O.—We have but little trouble in getting visible refuse removed, but as yet people are quite unwilling to make any change in regard to the style of their privies. We shall depend on shallow wells for our drinking water, although the village has been making an honest endeavor to obtain a good "artesian," for the past eighteen months, but as yet they have met with but partial success, although \$5000 has already been spent thereon. But one case of typhoid fever was reported during the past year; that resulted fatally; cause could not be traced.

*Contagious Diseases.*—Measles has alone visited us; they began during my absence, in January, and rapidly spread through the school. Over ninety cases in this village alone, falling to my knowledge; one fatal. Our large death rate, among children, must be attributed to the unsanitary condition of our small and poorly ventilated houses.

AUDUBON, (V.) BECKER CO., THOS. W. DUNLAP, ACTING H. O., JUNE 9, 1888.—May inspection done May 25-31. I have to report a better state of things generally. I did it late on account of the late spring, as it was then, there were some manure piles still frozen. I find very few lazy ones, but all seem to "clean up" well. Our village is flat prairie, and poor drainage. Have the village do some ditching when there are a few marshes (grassy), with stagnant water. I find the railroad depot and privy vault in good condition; also the public school building and vaults; the village jail also. In most of our privy vaults (the usual hole), I find more or less water, but there is no help for it on the present plan. No infectious or contagious diseases, and as nature has put on her best part we have no fears.

#### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JUNE.

##### DISEASES OF MEN.

Diphtheria.....	{ cases, 33
	{ deaths, 13
Scarlatina.....	{ cases, 11
	{ deaths, 5

##### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	44
Reported during the month.....	16
Killed.....	13
Released.....	1
Isolated.....	6

Remaining July 1st isolated or not accounted for ..... 46

NOTE.—Most of these are cases exposed, and isolated for further observation.

A SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

		Total number of Deaths from all Causes for the Month, 1100.																			Total of each disease
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Measles .....																					48
Scarlatina .....																					10
Diphtheria .....																					36
Croup .....																					14
Whooping Cough.																					8
Typhoid Fever....																					25
Erysipelas .....																					15
Puerperal Disease																					20
Diarrhoeal Disease.																					2
Cholera Infantum.																					4
Meningitis .....																					51
Rheumatism.....																					8
Cancer.....																					25
Phthisis.....																					117
Other Tubercular Diseases.....																					20
Apoplexy and Pa- ralysis .....																					19
Insane ....																					11
Heart Disease....																					36
Bronchitis.....																					66
Pneumonia and Pleurisy. ....																					120
Enteritis .....																					26
Diseases of Urin- ary Organs.....																					17
Still Birth .....																					43
Infantile D'bility } Premature Birth }																					85
Infantile Convul- sions .....																					42
Old Age .....																					94
Violent Deaths....																					51
Unclassified .....																					81
Total Males .....																					
Total Females.....																					
Grand Total.....																					



OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO JULY 15, 1888).

Per Cent of all deaths during the month	SEX		SOCIAL STATE	AGE															NATIVITY		PARENT NATIVITY													
	Male	Female		Single	Married	Widowed	Unknown	Under 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	5-10 years	10-15 years	15-20 years	20-30 years	30-40 years	40-50 years	50-60 years	60-70 years	70-80 years	Over 80 years	Unknown	City, Village or Twp. Other Minnesota	Other United States	Foreign	Unknown	Both American	Both Foreign	American Father Foreign Mother	Foreign Father American Mother	Unknown	Localities invaded	Counties
4.36	27	21	26	1			6	7	4	2	1	2	2	1	1									11	8	7	15	7	13	2	3	23	21	
1.46	8	8	8				3	1	2	2	1	2	2										16	2	2	1	1	3	3	1	9	9		
3.27	25	25	24	1			1	5	4	2	3	1	3	2									12	9	2	2	6	11	1	6	1	19		
1.27	25	24	24				3	1	2	2	3	3	2										11	7	5	2	8	14	3	3	1	19		
.07	4	4	4				2	1	1	1		1											1	2	1	1	2	2	2		4	3		
2.27	15	13	13	1			1	1			1	2	1	3	7	2	2	1	1	1	1		2	1	6	4	3	3	9	3	3	14	13	
1.36	8	7	4				1	1		1			1	2	1	3	1	1	1	1	1		1	3	1	5	1	1	4	6	1	2	6	6
1.82	20	20	20									1	11	8			2						1	7	5	7		6	11		3	11	10	
.02	2	1	1				1											1					1							1	1	2	2	
.04	2	2	2					1	2	1													2	2						1	1	4	4	
4.64	25	26	25	1			15	3	5	4	2		3	1	1	3	1					14	7	2	3	2	1	10	13	1	1	23	20	
.07	6	2	1	4			1									1	2	1	1	1	1		1	1	1	1	5	2			1	8	8	
2.27	14	11	11	2			1							3	2	2	2	1	1	1	2		11	7	2	2	1	10	3	6	3	16	12	
10.64	60	33	33	2			3	5	1	2		2	5	21	14	9	2	7	3			2	8	14	36	7	35	16	32	2	16	70	39	
1.81	9	8	8				3	5	1	2				2	2	1	1					3	1	2	2	1	1	6	4	2	1	11	9	
1.73	10	9	2	5	3						2			1	1	1	2	2	4			1	3	6	3	6	7				1	15	15	
1.	9	2	5	4	2								3	3		1	2	1					1		2	7	1				1	2	2	
3.27	22	11	9	12	1	2					1	2	1	4	3	2	2	1	4	3	6		3	1	2	6	12	1	6	11	1	4	2	23
6.	29	25	25	1	1	20	4						2	2	2	1	1	1	1	2		16	4	8	1	9	12	1	1	4	3	27	21	
10.91	65	45	16	1	2	13	8	1	1	2	3	3	3	4	6	5	5	1			3	24	10	13	14	4	11	42	2	2	8	44	32	
2.36	13	10	2	1	4	1							1	3	3	2	2	1	1	2		4	2	6	4	5	3	7	4		1	1	15	14
1.54	8	9	2	4	1		1						1	3	1	1	2	2	3	1		1		3	3	1	4	4		1	3	10	8	
3.09	33	31	2	33	10									1	3	1	2					33	10				10	19	1	1	1	2	16	14
7.73	52	52	33	33	51	1																38	6	6	1	1	11	32	2	5	4	45	25	
3.81	26	26	13	1	2	4	2															14	5	4	2	1	5	16	2	2	2	1	23	18
8.55	54	24	25	3	2	24																12	40	12	4	6	32	15		16	60	37		
4.63	41	22	11	4	1	1	2		1	6	1	3	8	4	1	6	2					7	5	7	17	4	3	25	6	1	2	10	23	
7.36	41	22	13	1	5	5	4	1	1	2	1	2	2	5	3	5	3	9				1	8	3	7	18	1	6	27	1	1	7		
.....	608	492	492	492	120	150	41	24	13	8	26	14	38	64	37	29	37	33	37	21	6	74	106	185	31	113	348	13	84	100				
.....	492	284	140	52	6	34	16	16	13	29	32	49	38	25	20	27	22	22	18	2	77	116	185	7	289	348	16	21	53					
.....	608	492	492	492	120	150	41	24	13	8	26	14	38	64	37	29	37	33	37	21	6	74	106	185	31	113	348	13	84	100				

## MONTHLY STATEMENT OF BIRTHS—MAY, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO JULY 15, 1888).

GRAND TOTAL, 1853		PER CENT	TOTAL	MALES	FEMALES	UN- KNOWN
SEX	Males .....	50.67	1853	939	.....	.....
	Females .....	49.06	.....	.....	909	.....
	Unknown .....	.27	.....	.....	.....	5
COLOR	White .....	99.84	1850	938	908	4
	Colored .....	.11	2	1	1	.....
	Unknown .....	.05	1	.....	.....	1
CONDIT- TION	Legitimate .....	99.57	1845	935	905	5
	Illegitimate .....	.38	7	3	4	.....
	Unknown .....	.05	1	1	.....	.....
NO. AT BIRTH	Single .....	97.41	1805	911	889	5
	Twins .....	2.59	48	28	20	.....
	Triplets .....	.....	.....	.....	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY	Both American .....	26.93	499	264	274	1
	Both Foreign .....	53.75	996	489	504	3
	Am'n Father—Foreign Mother .....	6.15	114	56	58	.....
	Foreign Father—Am'n Mother .....	11.33	210	110	99	1
	Unknown .....	1.84	34	20	14	.....

TABLE SHOWING MORTALITY OF SPECIFIED DISEASES, BY MONTHS, WITH NUMBER OF LOCALITIES AFFECTED—(JANUARY—MAY, 1888).

1888	FIRST QUARTER Av'ge of 3 mos.	APRIL	MAY	LOCALITIES	COUNTIES	1888	FIRST QUARTER Av'ge of 3 mos.	APRIL	MAY	LOCALITIES	COUNTIES
Measles .....	9	25	48	23	21	Other Tubercular diseases .....	18	20	20	11	9
Scarlatina .....	14	5	16	9	9	Apoplexy and Paralysis .....	26	13	19	15	15
Diphtheria .....	73	59	36	27	19	Insane .....	10	11	11	2*	2
Croup .....	23	17	14			Heart Disease .....	42	41	36	23	20
Whooping Cough .....	5	9	8	4	3	Bronchitis .....	44	50	66	27	21
Typhoid Fever .....	38	29	25	14	13	Pneumonia .....	99	109	120	44	32
Erysipelas .....	18	19	15	6	6	Enteritis .....	46	50	26	15	14
Puerperal disease .....	32	41	20	11	10	Diseases Urinary Organs .....	19	12	17	10	8
Diarrhoeal disease .....	19	11	2	2	2	Still Birth .....	52	60	43	16	14
Cholera Infant'm .....	0	4	4	4	4	Inf'ntile Debility Premat're B'th .....	101	92	85	45	25
Meningitis .....	52	50	51	23	20	Infantile convulsions .....	53	59	42	28	18
Rheumatism .....	6	10	8	8	8	Old Age .....	98	72	94	60	37
Cancer .....	25	14	25	16	12	Violent Deaths .....	32	34	51	34	23
Phthisis .....	99	83	117	70	39	Unknown and Unclassified .....	47	24	31	.....	.....

\* At Hospitals for Insane.

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
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VOL. IV. NO. 5.

JULY, 1888.

WHOLE NO. 41.

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## *DISTRIBUTION AND MORTALITY OF CERTAIN SPECIFIED DISEASES, IN MINNESOTA, FOR JUNE, 1888, WITH A COMPARISON OF THE MONTHLY RECORDS FOR THE FIRST SIX MONTHS OF THE YEARS, 1887, 1888.*

FOR June, 1888, there were reported 925 deaths, in 334 localities. *Unclassified*—A steady reduction is being affected, by correspondence and greater care in returns. First quarter, 140; second quarter, 82.

*Measles*.—27 deaths in 19 localities, and 14 counties; 49 deaths in May. A diminishing prevalence and mortality. The same is true of a comparison of the half year, January to June, 1887 and 1888; 145 to 129.

*Scarlatina*.—6 deaths in 4 localities, and 4 counties; reduced mortality as compared with any other month of the year. The same is true if we compare the half year (January to June) of the years 1887, 1888; 123 to 69.

*Diphtheria*.—38 deaths in 24 localities, and 19 counties. In June, 1887, there were 62 deaths; in May, 1888, 42 deaths, so that the reduction is marked, but not nearly so striking as when we compare the record of the past six months, January, 103; February, 65; March, 51; April, 62; May, 42; June, 38.

*Croup*.—8 deaths in June; 10 in same month, 1887. Comparing half year, (January to June) 1887, 1888, 92 to 144, there has been an increase of mortality, but a marked decrease (from 51 to 8) as between May and June, 1888.

*Typhoid Fever*.—21 deaths in 10 localities and 10 counties. It has diminished steadily since the beginning of the year. In order of months, January, 51; February, 33; March, 31; April, 29; May, 25; June, 21.

*Erysipelas*.—11 deaths in 7 localities and 7 counties, a diminution as compared with last month, (15, 11); but comparing the total mortality for six months (January to June) of years 1887 and 1888, 54 to 101, the mortality has doubled, though there is no evidence that the disease has been infectious, which, if marked, would have affected the record of puerperal diseases.

*Puerperal Diseases*.—17 deaths to June, in 14 localities and 11 counties. Same month 1887, 25 deaths. May, 1888, 21 deaths. A diminishing mortality for last three months.

*Phthisis*.—70 deaths in 34 localities and 24 counties. Same month last year, 80 deaths. Comparing the death rate from this cause for the first six months of the years 1887 and 1888, (554 to 378), there is a very marked reduction.

*Bronchitis*.—31 deaths in 12 localities and 10 counties. For same month in 1887, 67 deaths. Comparing half-yearly totals for 1887 and 1888, there were 211

deaths from this cause in 1887, and 280 in 1888, a marked increase. For the last three months the records are 108, 123, 56.

*Pneumonia*.—56 deaths in 20 localities and 16 counties, a marked reduction from 123 in preceeding month; but almost twice as great as for June, 1887, (30) Comparing the records of the first six months of 1887 and 1888, (352 to 583,) the increase is very marked, and was largely among children under 5 years.

*Cholera Infantum*.—15 deaths in June, 1888, and 175 deaths in June, 1887, a very great reduction, but not so great or striking as the comparison of the records of the first half-yearly returns of the same years. For that period in 1887 the deaths from this cause were 254; but in 1888, but 44, which means the saving of 200 infant lives from destruction by this cause alone.

EARTH CLOSETS.—The illustrated article in this number, will be issued as a circular for general use. Local Boards of Health, where the method is advisable, can get them in quantities on application.

SANITARY QUESTIONS AND ANSWERS.—We begin this month the publication, under the proper heads, of selections from the large correspondence of the Secretary with the representatives of the Local Boards of Health; persons asking questions; others reporting sick stock; others complaining of the violation of sanitary laws, and so on. We are prompted to the experiment by a variety of motives, but chiefly to save much correspondence, if health authorities will take the trouble to read these notes, month by month. Visitors to the office often ask, What is your correspondence about? These notes will answer. The notes for July, briefed in the concisest manner, cover twenty pages of closely written foolscap paper, excluding letters in which the same subject recurs. Only matters likely to interest others will be printed here and the details of the scheme will be varied as seems likely to increase its interest, and value.

IS NORWEGIAN LEPROSY HEREDITARY? IS IT INFECTIOUS? HAS IT SPREAD BY INFECTION IN MINNESOTA? WHAT IS THE PROBABILITY FOR THE FUTURE? On the day of his return to his official duties in Norway, Dr. Hansen has, with great kindness, written a brief summary of the results of his investigations as to the evidence he could find, in the families of immigrated Norwegians, of the heredity of Leprosy. Though he finds the number of lepers immigrated to this country, greater than he had supposed, he has been unable to find any evidence that Leprosy is hereditary. Is it infectious? He answers, yes, but feebly so, requiring direct



contact, and illustrates by reference to the facts of infection in Norway. "If people take the simplest precautions, on coming into contact with lepers, there is no danger whatever. Not one of the nurses, or servants of the Leper Hospitals, has caught the disease, though they daily wash and dress the patients." Will the disease spread in our state or the country? Under apparently favorable circumstances, it has not done so yet, nor, judging by all that is known, will it ever do so here. Every case, known to be in our state, is under observation and though we have families of lepers, to the third generation, no instance of spread by infection is known, the imported cases being the only representatives of the disease. Dr. Hansen believes the Sandwich Island Leprosy to be identical with the variety under consideration, but that the biblical variety probably represents more than one disease and is very difficult of modern classification. This last statement is in answer to inquiries, and is our memory of Dr. Hansen's belief, as stated incidentally, while discussing the general subject. It is proper to note that the record of lepers will be kept as carefully as heretofore, in Minnesota, and that all accessible facts respecting the disease or its victims, will be collected and made of use in its further study. Dr. Hansen's papers, contributed to PUBLIC HEALTH, will be printed in the form of a tract for popular distributions, and can be obtained on application to this office.

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*THE RESULTS OF AN INQUIRY JUST COMPLETED, AS TO THE  
HEREDITY OF LEPROSY AMONG THE NORWEGIAN IMMI-  
GRANTS AND THEIR DESCENDANTS, IN THE U. S.*

G. ARMAUER HANSEN, M. D., SURGEON IN CHIEF OF LEPER HOSPITAL, BERGEN, NORWAY.

MY intention in coming to America was to see if I could find a decided and undisputable proof of the heredity of leprosy. The field of investigation here ought to be very favorable for deciding the question, as there are in America many Norwegian families that descend directly from lepers in Norway, or have leprous kindred there. If now the disease is a hereditary one, there ought to be lepers amongst these people, and to fully prove the heredity, these lepers must be born here in America, and never have been in contact with lepers. As the heredity can not be destroyed by crossing the Atlantic Ocean, there ought to be such cases in this country if the disease be really a hereditary one.

I have now seen myself and examined the members of a number of Norwegian families in Wisconsin and Minnesota, who are in the case above defined, and I have not found a single leper amongst them. It will not be necessary to detail my observations, which I will do later in another place; it is only my intention here to give the results of my researches as briefly as possible. In consequence I will only further state that I have not found a single case of leprosy

originated in this country, as one might expect would be the case when so many lepers have immigrated. The number of immigrated lepers from Norway is much greater than I had any idea of, from the knowledge I could gather at home. My friends, Dr. Hoegh and Dr. Gronvold, have given me the names of many lepers here in America, whom we did not know to be lepers when they left Norway. After the researches of Professor Boeck, and after what I have seen myself, it is easy to conceive how that can be. Most of the lepers I have seen claim that they had no symptoms of the disease when they left Norway, and I have no doubt that even a professional man, well acquainted with the disease, would have been unable to detect any symptom of leprosy in the person at the time of immigration. When these people, later, turn out to be lepers, this does not prove that they have caught the disease here, but only that leprosy has a very slow development. I, for my part, have no doubt that the patients have been lepers at the time of immigration without knowing it themselves, the disease being hardly diagnosticable. This also shows that it is hardly possible to prevent the immigration of lepers, but as the disease shows no signs of spreading in this country, the prevention of immigration is not necessary. Why does not leprosy spread here? This is very difficult if not impossible to answer satisfactorily as we do not know the real conditions for the spreading of the disease anywhere. But if my opinions as to this point are right, I think that the cause is to be looked for in the greater cleanliness and the better dwellings of my countrymen here in this country than in their old home. Though they have there plenty of the purest water and soap is easily accessible, they generally use very little of either for the promotion of personal cleanliness at home, and what is of still more weight, the lepers I have seen here had their own room and their own bed for themselves, never being in direct contact with sound people.

This being the case, I think there ought not to be any fear of leprosy spreading in this country.

#### *THE EARTH CLOSET, ITS CONSTRUCTION, LIMITATIONS, AND USE.*

THE principles involved in the sanitary use of dry garden mould, peat, clay, and the like, are very simple, and their practical application to the disposition of human excreta is very easy too, provided that they are thoroughly understood, and that their natural limits are respected in their application to the intended use. This has not always been done, in the attempt to substitute the earth closet for "the hole-in-the-ground," by Health officers or by householders who have attempted it for themselves. In answer to many letters, and as promised at the Rochester Conference, this paper is prepared.

As has been repeatedly stated, in these columns, the majority of all who have tried to use dry earth for this purpose, have paid more attention to the mechanism of the closet than to the quality and condition of the earth. While some have trusted to the mechanism, and omitted the constant oversight without which any machine will, in the long run, fail.

The principles involved are these:

1. Dried (best sun-dried) and coarsely pulverized garden mould, peat, clay, (and other soils, in proportion to the amount of these which they contain,) prevent the odors of putrefaction, and secure the conversion of excreta into combinations harmless to animals but exactly adapted to nourish vegetable life.

2. To do this most thoroughly it is essential that soil of the character specified, should be *dry* and *in powder*. The apparent, and probably correct

reason for this is the freest admission of air, and the avoidance of that "water-logged" condition, which, in common experience, is so favorable to putrefaction and mal-odorous decay.

3. When used for dry earth closet, no other fluids must be added than those accompanying each discharge under, and upon which, enough dry earth must be thrown just before, and just after use, to prevent any appearance of wet. Dampness is permissible, soaking wet not. *The dry earth closet is not adapted to the disinfection of chamber, or kitchen slops*, and should never be used for that purpose. Assuming the above conditions complied with, dry earth as specified, and in quantity at least a pint before, and after use, the earth closet may be relied on for efficient work, under intelligent and regular supervision. Out of doors the freest ventilation consistent with dryness, is desirable. This should be above, below, and all around the container.

Another essential is that the container be nonabsorbant of either odors or fluids; still another that it be of such form as to be easily and thoroughly emptied and cleaned; and lastly that the mechanism be of the simplest and least expensive construction consistent with efficiency.

All these requirements are reasonably met in the plans herewith submitted. Fig. A represents a section of an outhouse, in which the ordinary construction is changed to that of an inexpensive earth closet, costing less than a single cleaning of the old and filthy vault. It is, as the engraving shows, open to the air on all sides, and its walls should be low enough to permit free ventilation between the seat and itself at the ends. Behind, it projects sufficiently to make the removal of its contents easy, but has a cover to keep out the rain. The whole interior of the box, (well made of seasoned wood,) must be saturated with petroleum paint, repeatedly, till the surface is glossy. Then when thoroughly dry, it will resist all fluids and be easily cleaned as need be. For the dry earth, a box or barrel, with a pint zinc scoop for handling it, should be on the floor of the outhouse, handy and ready for use.

*For household or sick room use, No. 2 is all that is required*, provided the following conditions are complied with:

1. That the fluid excreta be collected in an earthen vessel for other disposal, and not, (except for young children,) admitted to the closet.

2. That the earth be thoroughly dry, and in coarse powder. An admixture of coarsely powdered charcoal is a cheap, easy, and very efficient, addition, for either indoor or outside use. *Use no odoriferous disinfectants in earth closets.*

3. That the closet be under constant supervision, and that the first evidence of foul odor be immediately investigated.

The conditions seem, at first sight, onerous, but, after all, they are no more so than those which should govern the care of water-closets, and sinks. The household earth closet conveniently placed in the wood-shed, or other place outside the house, but not out of doors, will, especially in winter, be found a healthful substitute for the usual outhouse, and do away with the inclement journey, which is so common an excuse for the neglect, or postponement, of a necessary daily duty.

*The winter use of the earth closet.*—The earth to be used being dry does not freeze, so that it is as available and efficient as in summer, whether out, or in doors.

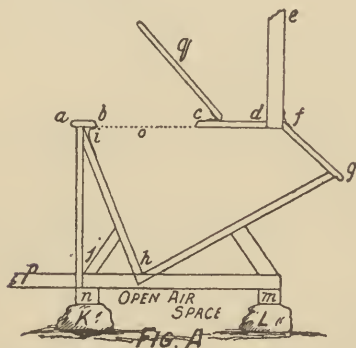
*The preparation of the dry earth.*—A coal-ash sieve for sifting the earth before drying. The sifted material should be spread on a floor, or rough platform, under shelter from rain but open to air. As fast as dried, store in barrels, in a dry place.

A half dozen barrels will serve a large family from October to May. It is easy and better to provide twice as much.

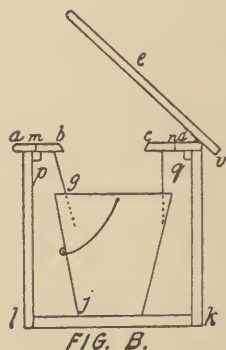
*The disposition of the contents of the earth closets*, if cared for as above directed, is very easy and inoffensive. Those in No. 1 may be quickly shovelled into a wheelbarrow and thence on the garden, spading it under the surface soil near growing things. As to the winter accumulation, it will, of course, remain in the outdoor closet till thawed out in the spring, when it is to be treated as

above. Any accumulations in the house closets should be collected under cover out of doors, and treated as above, in the spring.

These rules apply to any of the patented earth closets, for the best of them, unless cared for, speedily become nuisances. *It must not be forgotten that any mode of disposing of human excreta, from within an inhabited house, whether by water closet, earth closet, or in any other way, is artificial, and a possible source of ill health or disease. With any of them, tireless vigilance is the only security.*



Section through out-door earth closet. a, b, c, d, seat, usual size; f, g, h, i, receptacle for excreta; h, under point little back of centre of hole, b, c; h, g, so inclined to give room between f and g, for removing earth and excreta; f, g, door swinging on hinges, f, opening for cleaning, airing and sunning the box, g, h, i; i, zinc to direct urine into box. Box, i, h, g, rests upon sills, m and n of house. Sills m and n should rest upon stones, k and l, and they on top of ground, leaving space for circulation of air. Box, i, h, g, to be made of plank and saturated with petroleum paint before use.



Section through centre of house closet. a, b, c, d, seat, distance, a, d, 13 in.; a, b, 4½; b, c, 10; b, c, the seat rests on cleats, p and q, and can be removed, joints at m and n. To b, c, is attached a truncated cone, g, h, of zinc, 4 in. long; diam. 12 in. at top, 8 in. at o; g, j, is zinc pail, 13x13 in., with bail, n; cover, v, e, turns on hinge, d, and serves for back, when raised. The box to be saturated with boiled linseed oil. The earth box of the same size and oiled. The earth scoop of zinc, capacity, 1 pint. Use coarsely powdered charcoal with the earth, if possible.

### SANITARY QUESTIONS AND ANSWERS.

(T. C. abbreviation for Town Clerk; C. B. H. abbreviation for Chairman Board of Health; H. O. abbreviation for Health Officer; L. B. H. abbreviation for Local Board of Health.)

*Member of Board may be authorized to act for Board.*—July 2, Town Clerk Wells Tp., Rice Co., reported S. M. P—elected Health Officer. July 6, Secretary replied: "Mr. P— must be a physician to make his appointment legal. Board may appoint one of their own number to act for them, where immediate action is required; but I know of no authority to appoint other than a physician Health Officer outside the membership of the Board." July 17, T. C. reported A. B. Cowan, C. B. H., authorized to act for Board.

The Attorney General's opinion, in another case, dated June 20, applies here:

"I fully agree with you in your suggestion that it is not necessary for the whole Board to take an active part in the quarantine measures, and that one of their number can perform such duty, and that the Town Board could authorize the Chairman, or any other member to take the necessary measures to effect an efficient quarantine."

*Slough—A nuisance in village—How to deal with it—Opinion of the Attorney General.*—July 9, Health Officer, Pelican Rapids writes: "Slough condemned as nuisance, situated in inhabited part of village. No means of draining. Is filled every rain, and becomes offensive. Has been receptacle for refuse for years. Number of families in vicinity show malarial symptoms. A street is graded through it, but not filled, 65 feet in width. Have asked Council to fill street, and induce property owners to do the same with that part of their land. No action. Covers one-half acre. Can we compel filling of slough?"



July 20, referred to Attorney General. Under date of July 19, Attorney General gave his opinion:

"I am inclined to think that the provisions of Sections 4 and 6 of Chapter 182 of the General Laws of 1883, are broad enough to cover the case. While they, there, refer to private property, the owner of land adjoining a street has such an interest in land to the center of the street as enables him to abate a nuisance, and I see no reason why he could not be held to abate one."

July 20, copy of opinion sent to Health Officer.

*Railroad Stockyards—When offensive how to deal with them.*—May 26, C. B. H., Harmon Tp., Fillmore Co., complained of stockyards, owned by C. M. & St. P. Ry., as being too near Harmony Station, and very filthy. Had promise that they would be kept clean, but nothing has been done. June 2, Secretary referred the complaint to the General Manager C. M. & St. P. Ry., to which he replied June 6, "That the matter had been referred to the Supt. of the Dubuque Division. He also wrote June 11, that cleaning of yards had begun, and that they would be put in good condition. June 14, C. B. H. wrote that the yards were being cleaned for the first time. Railway Company say shippers must not feed in yards, only use them in loading. Citizens want yard removed. June 16, Secretary asked C. B. H. for plat showing location of yards, also for formal complaint of their Board, condemning the same as a nuisance, source of filth, or cause of sickness, should they consider it so. June 27, C. B. H. sent plat as requested, and formal complaint. June 30, Secretary referred complaint to the Attorney General for advice as to the best method to proceed. July 7, Attorney General replied:

"I would suggest that you proceed under Chap. 222, Gen. Laws 1885, to avoid any question upon that particular point. I would suggest that the Local Board assign a place where the stock yards may be located, and give the company notice of such action, at the same time forbidding the exercise of the business at any other point than the one so assigned, and serve notice thereof. If you prefer, however, you can proceed under Sec. 7 of said Chap. 222, in which case your Board would give notice and proceed as therein directed, but if such course is pursued, I think it would be well for the Local Board to assign a place where the business could be carried on, and so notify the company, and at the same time forbid the exercise of the business elsewhere. After the decision by your Board and notice, the proceedings would be the same, the action in either case being brought by and in the name of the Local Board."

July 9, sent copy of opinion of Attorney General to C. B. H., and advised him to proceed according to its suggestions. July 23, C. B. H. reported that L. B. of H. had located yards, and notified Railway Company of their action, but have heard nothing from them.

July 27, Secretary referred copy of C. B. S. letter to Railway Co., and asked what action they would take. August 15, C. B. H. reported that Supt. of Dubuque Division visited stockyards Aug. 6, and met L. B. of H. and other citizens. Aug. 29, C. B. S. sent following copy of letter from Supt. Dubuque Division to the L. B. of H.:

"Referring to the matter of moving stockyards at Harmony, we think, with you, that the yards should be moved, but owing to pressure of work, would prefer to do it early next year, instead of now, when cooler weather has already set in. We shall keep the yards in the best possible condition this season, allowing stock to remain there no longer than is absolutely necessary, and will move them next spring as soon as the condition of the ground warrants. Please advise if this will be satisfactory."

Sept. 3, Secretary replied, suggesting that yards be allowed to remain until next spring, upon condition that they be kept in a condition satisfactory to the L. B. of H., and that the Company agree to that, and promise to move in the spring. Have written agreement.

A SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	<i>Total number of Deaths from all Causes for the Month, 1905.</i>																			Total of each disease
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Measles.....																				27
Scarlatina.....																				6
Diphtheria .....																				38
Croup .....																				8
Whooping Cough..																				6
Typhoid Fever....																				21
Erysipelas.....																				11
Puerperal Disease																				17
Diarrhoeal Disease.																				4
Cholera Infantum..																				15
Meningitis .....																				62
Rheumatism.....																				9
Cancer.....																				16
Phthisis.....																				70
Other Tubercular Diseases.....																				12
Apoplexy and Paralysis .....																				25
Insane ....																				5
Heart Disease....																				33
Bronchitis.....																				31
Pneumonia and Pleurisy. ....																				59
Enteritis .....																				33
Diseases of Urinary Organs.....																				10
Still Birth.....																				72
Inf'ntile D'bility } Premature Birth }																				87
Infantile Convulsions .....																				31
Old Age .....																				67
Violent Deaths....																				70
Unclassified .....																				75
Total Males .....																				
Total Females....																				
Grand Total.....																				

OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO AUGUST 15, 1888).

Per Cent of all deaths during the month	SEX		SOCIAL STATE	AGE														NATIVITY				PARENT NATIVITY				Localities invaded	Counties															
	Male	Female	Single	Married	Widowed	Unknown	Under 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	5-10 years	10-15 years	15-20 years	20-30 years	30-40 years	40-50 years	50-60 years	60-70 years	70-80 years	Over 80 years	Unknown	City, Village or Twp.	Other Minnesota	Other United States			Foreign	Unknown	Both American	Both Foreign	American Father	Foreign Father	Foreign Mother	American Mother	Unknown						
2.92	12	12		12	13	2		7	2															3	5	2	3		4	9							19	14				
.65	3	15		3	3			1	3		1	2												2	1		1		1	10							4	4				
4.12	16	16		1				2	4		1	6												6	4	3	2		4	11							24	19				
.85	30	29	1																					12	7	4	6	1	5	19							2	3				
.65	2	2		4	4			2	4															2	2	1			1	1							1	5	5			
2.27	13	8		5	4						1													2	3	3	5	2		3	8						2	10	10			
1.19	6	9		3	3			3	2															3	3	2			2	2							2	7	7			
1.84	17	17		1																				1	1	7	8		3	12							2	14	11			
.43	2	2		1	1			2					1											1	1	2			1	1							3	3				
1.62	9	9		6	6			9	5															7	4	1	1		3	6							1	10	9			
6.7	33	25		7	1			8	5															11	5	7	9	1	5	17							9	22	18			
.97	3	6		3	3			6	3			3												1	1	1	3	1	1	1							1	9	9			
1.73	9	7		2	8			1																3	6	3			1	7							1	11	10			
7.57	34	20		12	22	2			1															2	2	9	21		7	21							3	34	28			
1.3	8	7		1				3	1		1													5	1	1	1		2	3							1	2	6	6		
2.7	12	2		9	1																			4	8				6							6	22	20				
.54	3	13		2	10			1																6	7				5								2	3	3			
3.57	24	5		1	1			1	2															1	1	1	1		1								3	21	15			
3.35	21	18		2	1			9	5		2	1												8	3	9	1		5	16							2	12	10			
6.38	32	23		8	1			6	5		2													11	3	6	11		1	3	22						1	1	12	10		
4.11	21	17		8	7			6	2		1													14	3	4	6		7	17							2	3	20	16		
1.09	4	3		1	3			3	1															7	4	2	5		6	13							2	2	24	21		
7.78	37	37						37																	1	2	2	5		1	5							2	1	6	6	
9.4	47	35						35																37	35				6	24						3	2	36	28			
3.35	23	40						44	2															38	33	5	3	1		14	24						1	4	4	48	39	
7.24	34	23						18	2		1													10	6	3	3	1		5	12							2	2	14	13	
7.57	61	33		14	13			3																	9	5	15	23		3	15							3	1	37	23	
8.11	41	34		2	17			1	4		2		1	1										1	6	6	8	19	2	9	21							1	3	7	34	28
.....	510	327		25	10			162	30		15		5	18	21	20									171	55			18	104								13	22	88		
.....	415	263		34	6			120	30		11		6	17	13	16									152	49			7	85								8	25	49		
	510	415		34	6			120	30		11		6	17	13	16									152	49			7	85								8	25	49		
	510	415		34	6			120	30		11		6	17	13	16									152	49			7	85								8	25	49		
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	510	415		34	6			120	30		11		6	17	13	16									152	49			7	85								8	25	49		
	510	415		34	6			120	30		11		6	17	13	16									152	49			7	85								8	25	49		
	510	415		34	6			120	30		11		6	17	13	16									152	49			7	85								8	25	49		
	510	415		34	6			120	30		11		6	17	13	16									152	49			7	85								8	25	49		
	510	415		34	6			120	30		11		6	17	13	16																										

## MONTHLY STATEMENT OF BIRTHS—JUNE, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO AUGUST 15, 1888).

GRAND TOTAL, 1745		PER CENT	TOTAL	MALES	FEMALES	UN-KNOWN
SEX	Males .....	52.66	1745	919	.....	.....
	Females .....	47.11	.....	.....	822	.....
	Unknown .....	.23	.....	.....	.....	4
COLOR	White .....	99.82	1742	917	821	4
	Colored .....	.06	1	1	.....	.....
	Unknown .....	.12	2	1	1	.....
CONDI- TION	Legitimate .....	99.03	1728	909	815	4
	Illegitimate .....	.97	17	10	7	.....
	Unknown .....	.....	.....	.....	.....	.....
NO. AT BIRTH	Single .....	97.24	1697	890	805	2
	Twins .....	2.64	46	27	17	2
	Triplets .....	.12	2	2	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY	Both American .....	27.39	478	251	224	3
	Both Foreign .....	53.47	933	489	443	1
	Am'n Father—Foreign Mother .....	5.85	102	49	53	.....
	Foreign Father—Am'n Mother .....	10.20	178	106	72	.....
	Unknown .....	3.09	54	24	31	.....

## TABLE SHOWING MORTALITY OF SPECIFIED DISEASES, FOR THE FIRST AND SECOND QUARTERS OF 1888.

(BASED UPON RETURNS FOR FIRST QUARTER, TO JAN. 15, AND FOR SECOND QUARTER TO AUG. 15.)

1888	First Quarter	Second Quarter	1888	First Quarter	Second Quarter
Measles .....	27	102	Other Tubercular diseases ....	55	53
Scarlatina .....	42	27	Apoplexy and Paralysis .....	79	58
Diphtheria .....	219	142	Insane .....	31	27
Croup .....	68	40	Heart Disease .....	125	115
Whooping Cough .....	16	23	Bronchitis .....	132	148
Typhoid Fever .....	115	75	Pneumonia* .....	298	295
Erysipelas .....	55	46	Enteritis .....	139	119
Puerperal diseases .....	96	81	Diseases Urinary Organs .....	57	39
Diarrheal diseases† .....	58	18	Still Birth .....	157	177
Cholera Infantum .....	—	23	Infantile Debility. } .....	314	269
Meningitis .....	155	157	Premature Birth .. }	.....	.....
Rheumatism .....	17	28	Infantile Convulsions .....	148	134
Cancer .....	74	56	Old Age .....	294	240
Phthisis .....	297	281	Violet Deaths .....	157	156
			Unknown and Unclassified ..	140	82

\* Includes 16 cases pleurisy.

† Includes 19 cases under 5 years of age.

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JULY.  
DISEASES OF MEN.

Diphtheria .....	{	cases, 80
		deaths, 28
Scarlatina .....	{	cases, 5
		deaths, 1



## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for .....	46
Reported during the month.....	6
Killed.....	13
Released .....	3

Remaining August 1st isolated or not accounted for ..... 36

NOTE.—Most of these are cases exposed, and isolated for further observation.

## SANITARY INSPECTION REPORTS.

DETROIT (V.) BECKER CO., DR. J. B. CARMAN, H. O., MAY 30, 1888.—Last year we had considerable trouble in getting families to take care of refuse matter from kitchen and cellar, and to keep their privy vaults in proper shape. This year a meeting of the Board of Health was called and the matter of appointing a scavenger brought up. We decided to lay the matter before the Village Council, who gave us permission to advertise for bids. We accepted a bid and issued a contract, the contractor binding himself to visit every inhabited house in the village once a week from the fifteenth of May to the first of October, and remove all refuse matter placed in boxes by the residents; also to clean out every vault in the village and dispose of the contents as directed by the Board, for which we agree to issue orders accepted by the council to the amount of \$495. As early as practicable, we issued an order for the citizens to clean up their premises, and on my visit of inspection, I found it had been obeyed with very few exceptions. I consider our town in a much better condition, in a sanitary sense, than it has ever been before.

*Supplementary, June 22, 1888.*—The part of the agreement covering the disposition of contents of privy vaults, I copy: "First, that he will clean each privy vault within the platted portion of said village at least once a year, at such times as the Board of Health shall direct, and convey the contents of said vaults to places that shall be appointed and approved of by the Board of Health, and either compost the same in thoroughly pulverized soil, or place the contents in shallow trenches thoroughly covered with loam, all to be done in a manner to the complete satisfaction of said Board of Health. Second, that he will gather up all vegetable and refuse matter, which shall be placed in barrels, boxes, or other suitable receptacles by people who occupy lots and tenements within the platted site of said village, all to be done under the direction of said Board of Health, and said receptacles to be emptied at least once in each week, between the fifteenth day of May and the first day of October, during the continuance of this contract." The party who does this work lives one-half to three-fourths of a mile from the village, has a farm and is taking good care of contents of privy vaults, getting it into shape to use on his land. He keeps a number of pigs, and what garbage he can feed them he uses for food. What is useless as food or fertilizer, he puts on vacant land, such as tin cans, broken crockery, &c.; ashes, &c., he puts in the compost with privy vault contents. So far we have few complaints, and those principally from folks we could never get to do anything themselves except by driving.

GENTILLY, TP., POLK CO., REMI FORTIER, C. B. H., JUNE 1, 1888. — I have just completed the sanitary inspection of the town of Gentilly. There are sixty-four families and four vacant places in the town, all of which are kept according to the sanitary laws of Minnesota, except the following cases: Cellars, thirty, dry and light; twenty-two, damp, but clean and light; sixteen with water in, clean and airy. The great number of wet and damp cellars is due to the recent heavy rain fall. Water supply, two wells, ordered cleaned; one condemned in connection with slough water. Privies, three, ordered cleaned; barns, two, ordered cleaned; cow shed, one, ordered cleaned; old carcasses, three, ordered buried.

HENDERSON, (V.) SIBLEY CO., J. D. SIMPSON, M. D., H. O., JUNE 8, 1888.—The borough inspected, May 31, by its Health Officer, and found to be clean, with few exceptions. These exceptions consisted of manure heaps. The owners of these were ordered to remove them and clean up and once. Our borough has a population of 1,000. There has been very little sickness in the borough the past year. We have had two deaths during the past fifteen months; one of these died from old age, and the other was an infant.

MADELIA, (V.) WATONWAN CO., DR. W. H. SHAVER, H. O.—Inspection made last week in

May, having been put off on account of the continued rains. General condition fair; but the wet weather prevailing at that time prevented some from complying with the general notice given through the local paper, to remove manure, garbage, etc., within the stated time, although all showed a willingness to conform with the requirements of the law. Complaints of nuisances, which were numerous last season, have been limited to three so far this year, all of which were removed by request; no official notices having been served.

*Sewers*.—None, except a few private ones, mostly constructed this spring to drain water from cellars. A good large one to drain the pond holes in rear of town, where all the surface water mostly gravitates, would obviate any need of so many smaller private ones. The matter of public sewerage was agitated lately but no definite action taken yet. The lack of drainage and the old hole-in-the-ground closets are our greatest sources of dangers, and, I might say, only evils. The pond-hole is fast being filled with good earth surplus from new cellars.

*Water Supply* is entirely from wells, and a great many tainted by surface water.

*Stockyards at Railway Depot*, on the outskirts of town, and in fair condition.

*Slaughter House*, outside village limits.

*Manure and Garbage* mostly taken to adjoining farms. Other rubbish dumped on waste land outside village limits, at a good distance.

*Public Buildings, Schools, Hotels, etc.*, all heated with stoves, except two or three churches, which have furnaces, (hot air). Ventilation, poor, which is by windows, and about as good as construction of buildings will allow.

*Contagious Diseases*.—There has been diphtheria in three families; eight cases; one death. Scarlet fever in three families; no deaths. Measles and mumps have been epidemics; none isolated and no deaths as far as I can learn.

ADRIAN, NOBLES CO., DR. C. C. MAY, H. O. — No contagious disease of man or beast is to be found in the village, and none has come to my knowledge during the past year. One case, suspected to be glanders, was proven to be otherwise, and the animal released.

During the year 1887, there were reported twenty-eight births and five deaths. Four of the deaths were of infants under one year, and the fifth, of a very old man. In 1888, up to June 1, twelve births are reported, and no deaths.

The water supply is, of course, from ordinary surface wells. The water furnished by these, with few exceptions, is good. In a few, the water has a disagreeable taste, and smell, and is not used for drinking purposes. But in these cases there is no evidence of surface contamination, and the odor and taste are due, no doubt, to the presence of mineral elements, probably sulphur compounds. The natural drainage of the land in the village is good. One ditch was found obstructed by rubbish, and order was given to have it opened. At present many cellars in the lower parts of town contain more or less water.

A great deal of manure had accumulated during the winter. An order was published more than a month ago, directing that this and other rubbish be removed; A few heeded the order; more did not, and I have given special orders to all persons on whose premises such filth was found, to have the same removed. The orders are being generally obeyed. A few hog-pens are found in town but not in situations to be particularly offensive.

Perhaps the most unsanitary fact coming under my notice, is the condition of privies, or rather the system on which they are constructed. I found one privy with tight surface box. All the rest are simply holes in the ground. These, in many cases, are not more than twenty or thirty feet from wells. They are allowed to fill up, and are then partially cleaned, or are covered with earth, and a new hole dug a few feet away from the old one. If this plan be continued, the soil, for a considerable distance around each privy, much in time become saturated with its contents. The effect on wells in the vicinity can easily be imagined. Any attempt to prevent these results by cleaning, disinfection, etc., would be futile, and the simplest, efficient remedy I can recommend is to have all privies built with water-tight surface tanks. I have not ordered any such changes, because they are radical, would involve considerable expense, and would therefore probably meet much opposition, if made solely on the order of the Board of Health or Health Officer. But I recommend that the council pass an ordinance, requiring such surface tanks to be placed in all privies, at least in blocks one, two, three, six and seven, and B, C, D and E, on Main street, where there is less room, and where wells and privies are most numerous. It will then be possible for the Health Officer to see that these are kept in sanitary condition.

In other respects the sanitary condition of the village is good, or will be when the order of the Board of Health shall have been carried out, which will be done in a few days.

# PUBLIC HEALTH IN MINNESOTA.

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AND VITAL STATISTICS,

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AUGUST, 1888.

WHOLE NO. 42.

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## DISTRIBUTION AND MORTALITY OF SPECIFIED DISEASES IN MINNESOTA, FOR THE MONTHS OF JULY AND AUGUST, 1888.

NOTE:—We find that the returns of deaths come in with so much promptness now, that it will be possible, hereafter, to publish this record by the twentieth of the month after that to which it relates. It will be understood that at that time all of the returns of deaths are not in, but so large a proportion, and so widely distributed, are at hand that with the returns of infectious disease which are up to date, the record is a fair reflex of the character, mortality and distribution of disease all over the state. H.

*Unclassified.*—July, 50; August, 61. The number will be reduced by correspondence.

*Measles.*—July, 15; August, 10. The mortality and distribution has steadily diminished for several months.

*Scarlatina.*—July, 6; August, 5.

*Diphtheria.*—July, 39; August, 43. A slight increase.

*Croup.*—July, 7; August, 7.

*Typhoid Fever.*—July, 18; August, 44; in 18 localities. The mortality increased and the distribution wider.

*Erysipelas.*—July, 15; August, 8.

*Puerperal Diseases.*—July, 17; August, 7. Mortality less than of any other month in 1888.

*Phthisis.*—July, 76; August, 103.

*Bronchitis.*—July, 25; August, 13. A steady reduction since January.

*Pneumonia.*—July, 21; August, 31.

*Cholera Infantum.*—July, 218; August, 379. A very large increase, both in mortality and distribution. Of these 106 occurred in St. Paul, and 105 in Minneapolis.

THE AMERICAN PUBLIC HEALTH ASSOCIATION meets in Milwaukee on the twentieth of November, and continues in session for three days. The business of the Association is now so far arranged that we are able to promise a very stirring and interesting meeting. The delegations will be large and representative, from nearly every state and from both provinces of Canada. Looking at this gathering from the standpoint of the Local Board of Health, and Health Officer, there is a rich treat in store for all who attend. You will get new views of an old subject. You will meet other men, from localities, wide apart, on the same quest as yourself. You will see the influence of locality, government, social and business relations and customs, upon the ends and methods of sanitary administration. A wide field for curious or practical

investigation will be at your disposal, and he must be very dull who does not get pleasure and profit from it. Come prepared to contribute your quota to the common fund of information, and enter heartily into the spirit and business of the occasion. So doing, you will find your knowledge increasing, your interest deepened, your convictions strengthened and broadened, by the evidence, all around you, that Public Health is no longer a theory, or a halting experiment, but a living art, working wonders of life-saving and disease prevention, all over the land. It is worth your while to meet on the level of a common pursuit, the men who have made American sanitary service what it is, without the heavy pecuniary backing, which many thought necessary. The subjects coming up for discussion, in the regular order of business, are those of every day sanitary work which have very likely vexed and worried you, but here are hundreds of men who can, and will, bring to their discussion as many experiences of their practical trial, showing such a variety of treatment, that no matter of practical concern can well escape a better understanding. Nowhere else can you get so wide a view of the whole field of Public Health, both as a science and an art as at the meetings of this Association, where workers in every department come to compare notes, report progress, or take counsel for a new advance. None more than the members of Local Boards of Health, working in a limited field, often under unfavorable or discouraging circumstances, need the refreshing which these meetings afford. They help us to avoid the too common mistake of the man in the well who, finally, persuaded himself that the hole at the top defined the utmost horizon. A broad vision and clear understanding of the whole of a subject increases one's efficiency in any department of it, and that is one of the gains one makes here.

THE REPRESENTATION OF MINNESOTA, in the organization of the American Public Health Association, for 1887-88, is as follows:

President—Dr. Charles N. Hewitt, Red Wing.

Member Advisory Council—Dr. S. S. Kilvington, Minneapolis.

Member Committee on Animal Diseases and Animal Food—  
Dr. D. W. Hand, St. Paul.

Here are a few of the subjects (the exact title is not in all cases settled,) upon which papers will be read by the gentlemen named, at the coming meeting of the American Public Health Association. It will be seen that the readers are representative men, and the subjects of living interest:

"The History and Administration of Quarantine in Texas, 1878 to 1888"—By  
Dr. R. Rutherford, State Health Officer of Texas.

"The Canadian System of Maritime Sanitation"—By F. Montizambert, M. D.,  
Quarantine Officer at Grosse Isle, St. Lawrence River.

"Yellow Fever, Panics, and Useless Quarantines, its Limitation by Temperature"—By John H. Rauch, M. D., Secretary of the State Board of Illinois.



- "The Organization of the National Health Service"—By Dr. Henry P. Walcott, President State Board of Health of Massachusetts.
- "State Boards of Health"—By Ezra B. Hunt, M. D., Secretary State Board of Health of New Jersey.
- "The Difficulties and Success of the Public Health Service in Large Cities"—By Oscar C. DeWolf, M. D., Health Commissioner of Chicago.
- "Ontario Sanitary Legislation, its Strength and its Weakness"—By Dr. John Coventry, Medical Health Officer of Windsor, Ontario, Canada.
- "The Destruction of Organic Matter by Fire as a Sanitary Measure—Garbage Furnaces"—By Dr. S. S. Kilvington, President of the Board of Health of Minneapolis.
- "Vaccination as a Protection from the Infection of Small Pox"—By Dr. D. W. Hand, President of the State Board of Health of Minnesota.
- "Tuberculosis, its Origin, Detection, and Control"—By Dr. E. Salmon, V. S., Chief of the Bureau of Animal Industry, Washington.
- "Veterinary Sanitary Work in Wisconsin, with Special Reference to Diseases Communicable to Man"—By V. T. Atkinson, V. S., State Veterinarian of Wisconsin.
- "The Relations of Bacteriology to the Discovery and Prevention of Causes of Infectious Diseases, among Men and Animals"—By Theobald Smith, M. D., of the Bacteriological Laboratory of the Bureau of Animal Industry, Washington.

This is but a partial list, but will serve to indicate the wide variety of topics and treatment and the character of the essayists. Free use will be made of the microscope, stereopticon, and of diagrams, in illustration, and not the least attractive feature will be the debates provoked by the essays, which serve to bring out men who have not written but who can express themselves, on their feet, with a lively force and directness which makes their discussions one of the most instructive and entertaining feature of the meetings.

#### SANITARY QUESTIONS AND ANSWERS.

(T. C. abbreviation for Town Clerk; C. B. H. abbreviation for Chairman Board of Health; H. O. abbreviation for Health Officer; L. B. H. abbreviation for Local Board of Health.)

*School-house Privy Vault a Nuisance.*—August 1, H. O. of Kasson complained of privy vault, (hole-in-the ground) in use at public school, has never been cleaned. This summer vault was half full of water. Notified Clerk of School Board, to have vault and building cleaned within thirty days. We advised vault cleaned and then filled with dirt, and long drawers with use of dry earth substituted. No notice taken of our order. Eight or nine barrels of lime have been put in the vault. Village Council advised me to arrest School Board. What can be done? August 2, Secretary replied: "As the questions which you ask are purely local, and as the law gives your Board full power to decide and act in such matters, I can but refer you to it for advice. If under Sec. 4, Chap. 132, Laws of 1883, your Board decide the vaults and outhouse in question to be a nuisance, source of filth or cause of sickness, they may make such regulations concerning the same as they may judge necessary for the public health. For neglect to obey such orders or regulations duly published, penalty is defined. Secs. 6 and 7 of the same law, also refer to this same thing. I know no way to purify a vault except to clean it and close it up. Earth closets are perfectly practicable and are the only *decent* thing practicable outside the water closet system of a permanent water supply and sewer system."

*Irregular Strangles in Horses.*—August 1, C. E. Dinehart, Slayton, reported a disease among fifty horses in one pasture, in Iona Township, called strangles or glanders. August 3, Secretary telegraphed C. B. S. to isolate all

horses in the pasture and employ nearest reliable veterinary surgeon to examine them. August 4, T. C. reported: "Have no reliable veterinary surgeon around here." August 6, Secretary telegraphed Wm. Standish, veterinary surgeon of Mankato to go, which he did, and reports:

"By your direction I visited Iona, Murray County, August 7, 1888, and inspected thirty-seven head of horses, mares and colts, ages running from three months to thirteen years, owned by several different parties, and in care of Martin McDonnell, all being together in a pasture containing 900 acres. The pasture is rolling prairie; in it there are two sloughs, one of them covering about eight acres, the other one acre, but at time of visit both were dry. There is a well and pump to supply water for the animals in the pasture. The animals were all raised in the neighborhood and are all owned by parties in that vicinity, and hitherto there has been no sickness or disease among them.

Thirteen of the number, I found having a purulent abscess in the sub-maxillary space, nasal discharge, and abscesses scattered over different portions of the body. Diagnosis—Irregular strangles. The affection is confined to animals from one to three years old."

#### DIPHTHERIA IN WASIOJA TOWNSHIP, DODGE COUNTY.

INVESTIGATION and report by Dr. Hunt, H. O., of Northfield, for the State Board of Health.

WASIOJA, Minn., August 3, 1888.

Dr. C. N. Hewitt, Secretary State Board of Health, Red Wing, Minn.,

SIR:—About April 20, ult., diphtheria made its appearance in my family under circumstances so peculiar as to demand more than ordinary attention, while the continuance of the infection makes it necessary to call for your assistance and direction for its complete removal.

On April 20, we had with us to dinner a physician, who had just returned from where he had served as an "interne" in a city hospital. His two children were with him—one a girl of four years. April 28, our eight-year old boy was taken ill with symptoms I did not understand. The next day he was better; on the following day worse. The same day we learned that the little girl had diphtheria. Investigation at once showed the malady fully developed in our son. The two cases were nearly parallel. I at once prepared my granary chamber, fifteen rods away, as a hospital, and removed the boy to quarantine. The case yielded to treatment and progressed favorably. Three days after, the boy's playmate and bedfellow, ten years old, reported ill, was found with gray points on his left tonsil, and sent to hospital. A mild case, and his throat cleared in three days; the two boys getting well together. I took entire charge of these cases, after a day or two assistance from the doctor, whose child died on the fifth day after ours came down. A few days after this, my eldest son, who was obliged to enter, occasionally, the chamber, while I took needed rest, was taken ill, escaping with a light attack and a confinement of three days. At the end of two weeks these cases were all well, the hospital was broken up and proper precautions taken as to disinfection. My wife, on the Sunday following, reporting for inspection, was found suffering from a light attack of the malady. She had washed some of the clothing worn by the invalids, before boiling them in the disinfecting fluid. Another son, who had assisted about the granary, reporting at the same time the hospital was reopened. He was ill but three days and his recovery was speedy. The granary was again disinfected, and at the end of another week I felt at liberty to resume my official duties, having reported to the Health Officer at Dodge Center and obtained an official discharge from my self-imposed quarantine. Returning on May 30, after a day's absence, I found two new cases—my daughters aged twelve and thirteen respectively. The weather was so bad that I hesitated about removing these cases as before, from the house, which was, indeed, probably infected, and so putting them into their chamber, I shut myself in with them. Those cases, though very severe, went on favorably to recovery, but I did not escape my three days' experience with the disease, at no time being unable to attend to my patients, however.

My family consisted of ten children, myself and wife. With a single exception, all were attacked, the last to surrender, my four-year-old boy, going hopelessly on to his death, dying June 22. Again, rigid precautions were taken for disinfection, with paint, paper, varnish and the use of all of the approved germicides and disinfectants with apparent success. The member of the family, so far escaping, was my sixteen-year-old son, who had slept out of the house during all of the later period of dangers. The granary, meantime, had been fumigated with sulphur, and the floor swept with brooms wet in a saturated solution of ferric sulphate. Preparing to whitewash and paint the building, as a further precaution, I directed this son, on the twenty-sixth ult., (July) to wash the floor. He did so, on the next day reported ill, was found with two gray patches on the posterior walls of the pharynx, and was sent to quarantine. He was, yesterday, sufficiently well to take his discharge. All clothing and bedding and the straw mattress was burned, the floor washed in a solution of corrosive sublimate and large quantities of sulphur burned in the chamber, and all other precautions taken that I have found useful. During all this period in fact such sanitary measures have been taken that despite this long exposure, no one but ourselves have suffered. With some sanitary knowledge, I have felt equal to this part of the task, and what has been done has the approval of our Local Health Officers.

After this last outbreak, I sent for our Township Supervisor, Mr. Charles Darling, of Wasioja, who has charge of this district of our town, and to him expressed my wish for a thorough expert inspection of the whole matter, with a view, first, to discover the origin of the outbreak; second, the absolute removal of its cause. By his advice and authority, and at his request officially made, I have therefore to ask to detail a fully qualified sanitarian to report to Mr. Darling for this purpose at the earliest period practicable. We have no local experts, whose judgment would be of any value.

These cases have been stated in a somewhat detailed way in order that you may be able to decide more readily what action to take. My premises have always been sanitarially sound, but it remains an open question as to the origin of the cases. Feeling it a reproach upon our sanitary knowledge that these cases should escape detection and a source of future public danger I feel bound, personally and officially, to ask that the matter be hunted down. I beg, therefore, your early compliance with this request, by sending us a person in whose judgment you have confidence and of whose skill you have no doubt.

Respectfully, A. M. SPERRY, County Supt. of Schools.

On August 6, Secretary requested Dr. W. A. Hunt, H. O. of Northfield, to investigate the matter, which he did and reports:

NORTHFIELD, Minn., Aug. 8, 1888.

*Dr. C. N. Hewitt:*

In answer to your request of the 6th, I yesterday visited Wasioja and made a careful investigation of the recent outbreak of Diphtheria, and would make the following report: Two families only, so far, have suffered with the disease—those of A. M. Sperry, superintendent of Dodge County schools, and Dr. C. There were thirteen cases in all. Mr. Sperry lives on a farm about one mile from the village of Wasioja, and Dr. C— in the outskirts of the village, probably half a mile, or more from Mr. Sperry. Both have nearer neighbors, none of whom have had diphtheria. On inquiry, I found there had been no diphtheria in Wasioja for years, and none in vicinity for past year. The first appearance at this time was almost simultaneous in both the above mentioned families about April 18. Dr. C— had been engaged professionally in the city, and was not at home during my visit. April 14 he came home for a short visit, and April 16, with his daughter, took dinner with Mr. Sperry and family, and April 17, with another neighbor, where there were also children. April 18, the eight-year-old-boy of Mr. Sperry, and Dr. C—'s daughter were both ailing, sickness appearing first, by a few hours, possibly twenty-four, in Dr. C—'s child. The disease was recognized at once by the doctor, whose child died April 29th, or thereabouts. The spread of the disease through the family of



Mr. Sperry, is accurately given in his letter to you. The ten (10) children, himself and wife were sick in the order therein given, his four year old boy dying.

The sanitary surroundings of the two houses are as follows; Mr. Sperry's house is built on an elevated piece of ground, open to air and sunlight. Cellar dry and well ventilated. Well, about four rods from house, and six and one-half rods from privy and stables, with natural inclination of ground from the well down towards the out-buildings. Well, a dug well, forty feet deep. I tested the water of this well by the chlorine test, and found less than eight-tenths of a grain of chlorine to the gallon, showing pretty conclusively that there was no sewage contamination. The dry earth system is used in the privy with a water-tight box. This was put in place a few months ago, although for years he had used dry earth in an ordinary privy vault as carefully as he does now in the above-ground structure. The stables are probably ten or twelve rods from the house and in fair condition. The house occupied by Dr. C. is situated on low ground, the back yard requiring draining to keep it dry. The water supply from a dug well must necessarily have been affected by surface water and possibly by barn and privy drainage, as they were on the same low ground and not far removed from the house. At the date of the illness several barrels of rain-water had been stored in the cellar, under the house, until they had become very foul and had to be removed on account of the stench. A neighbor's barn, to rear of this lot, was also said to have been in very bad condition during the spring months.

If unhealthy location and surroundings can originate diphtheria *de novo*, this place might be said to be favorable to such origin, while the natural location and surroundings at Mr. Sperry's would place him above this suspicion. I am inclined to believe, however, that Dr. C., with the precautions usually taken by physicians, might have conveyed the disease from the city, as I learned from his wife and Mr. Sperry that Dr. C. had attended cases of diphtheria previous to his visit home. How long prior to his visit home, he had been in communication with such cases, his wife could not say.

The safeguards taken to prevent further spread have been very thorough. All the cases have been completely isolated from the public. The sick were all cared for; all discharges from throat, nose and mouth were received on cloths and at once burned. The usual passages being thoroughly disinfected in a solution of sulphate of iron before burying. All bed, body linen and clothing was placed in boiling solution of zinc sulphate before being washed with soap and water. After recovery, all the clothing was thus disinfected. Other clothing, furniture and the rooms were thoroughly fumigated with sulphurous acid fumes and well aired. The walls and floors were carefully washed with a corrosive sublimate solution and then white-washed, papered and painted. In fact, the instructions given by the State Board in its circular on diphtheria, which Mr. Sperry had and followed, were faithfully carried out. As to the absolute destruction of the contagion as a center of infection for the future, as asked for by Mr. Sperry, I could only assure him that having taken every known and reasonable precaution, we must now await a reasonable time to elapse, before which it would be impossible to promise absolute immunity. I recommended further watchfulness and care in allowing the recently sick to mingle with other persons and particularly children, and advised against others visiting the premises until more time had elapsed and with these precautions fully attended to, would not expect any further spread of the disease.

Very truly,

W. A. HUNT, M. D., H. O.

#### MAY SANITARY INSPECTIONS.

KENYON (V.) GOODHUE CO., DR. G. H. OVERHOLT, H. O., JUNE 4, 1888.—Much of the manure, garbage, etc., is already cleaned away, and I have given public notice that by the 15th inst., all must be cleaned up. As we have had no rain for some days, the water in the cellars is settling, and the street commissioner has promised to make some drains in places most



needed to carry off the surface water when it again rains and when the water is pumped out of the cellars and some of the wells.

The standard of health is good as usual: what we need is a few good sewers, and we hope to have them in time. As to privies, it seems to me, that if you would cause to be published in every place where there is a newspaper, a concise statement how to construct them, we could all learn therefrom, and by degrees have the necessary improvements.

MORTON (V.) RENVILLE CO., DR. R. D. ZIMBECK, H. O. JULY 11, 1888.—Spring clean up delayed on account of heavy rains. Sanitary condition good. Water supply from wells. Water of good quality. No sewage system. Old privy vault is used. Manure, garbage, etc., removed outside of village.

WHEATON (V.) TRAVERSE CO., DR. C. A. LAMPANIUS, H. O. JUNE 1, 1888.—Have made the general spring inspection and find as a general rule the compliance to facilitate sanitary measures to the promotion of health, with the exception of few whom I have given notice, they have complied, to clean up and remove from their premises such accumulations. Would also report the necessity of having a dumping place for manure and such other rubbish as should be removed, and notice in the local paper to that effect, also for having vessels to deposit garbage and remove from premises as necessity requires, finding the village in a fair sanitary condition with no knowledge of any epidemic diseases.

ATWATER (V.) KANDIYOHI CO., DR. J. S. GIBSON, H. O.—Our town, under the circumstances, is in a reasonable good sanitary condition. On account of the unusually great quantity of snow, last winter, and the lateness of the spring, and the continuous rain, it has been almost impossible to get manure piles and filth generally removed; but now everything is in a pretty good condition, except that in a good many cellars there is water which it is impossible to get rid of so long as there is so much water in the sloughs and no way provided for it to run off. I think it is very prudent that our common council have become interested so that they are laying plans to take efficient action in this matter. The past year has been a reasonable favorable one for us, we have had no epidemic of disease, and not much sickness until within the past few weeks, which has been, I think, the result chiefly of the dampness and cold. I have nothing new to offer or advise unless it be to continue to keep calling attention to the need of draining the the sloughs until we shall get rid of this serious nuisance.

CHATFIELD (C.) FILLMORE CO., DR. R. W. TWITCHELL, H. O.—By reasons hereinafter stated, it was impossible to make an earlier, and also complete, inspection of all parts of the city. Especially on the business part of Main street, this was rendered impossible, by reason of the excessive amount of rainfall, during the early spring, that flooded nearly all of the cellars to a considerable depth with water. This inconvenience may be overcome, in the future, by a judicious system of drainage. The cost of such a drain, or sewer, would be but small, in the aggregate, because, one properly constructed sewer, would drain every cellar on the business part of Main street. This I know to be a fact; because, about thirty years ago, one cellar was thus drained. The drain, now filled up, did empty the water from all of the other cellars that, at that time, was dug. This being true, the philosophy of the fact, it is not necessary to enter into.

During the period above mentioned, of so much water, the occupants of the flooded district, were untiring in their efforts—with pumps—to empty the said cellars of their accumulated water, and thus to prevent stagnation, and the consequent accumulation or development of germs. Thus was rendered far more an inconvenience than a nuisance. The succeeding dry weather has, mostly, removed that state of things, and consequently, most of the cellars are now dry again. Still, well directed ventilation must be kept up till all such places are thoroughly dried out.

Credit, generally, is due the citizens for ready co-operation with the Health Officer, in his efforts to rid their respective localities of everything that would be likely to endanger the health or the comfort of the locality. This remark cannot be more of universal application. In a few instances, such co-operation has not been received.

While during the winter and early spring, considerable sickness prevailed in and about Chatfield, and more than the ordinary amount of deaths were reported; still, from about the time of my last annual report, Chatfield has been entirely free from any disease of an infectious nature; nor has an epidemic of any kind appeared among us. At the present time, as also for months past, the general condition of the public health, is and has been exceptionally good.

The most notable condition of bad sanitation is the manner of construction and the objectionable condition of the privies of the city. Not all, but nearly all, are subject to the same criticism, of not only being bad, but of being very bad. Not one is just what it should be, so far as my observation has reached. I have plans of improvements in this direction, but inasmuch as we are promised "Plans of Construction" from the State Board, I await their presentation.

The stock yards of this place are in a fair condition.

Regarding the mill-pond, slaughter-house, creamery, and pig-pens, all is about as it was at the time of the visit of the Secretary of the State Board, late in May last—only fairly good. Their condition can, and will be improved, probably in the near future.

RUSH CITY (V.) CHISAGO Co., DR. THOS. ZEIN, H. O., JUNE 14, 1888. —During the past year the Board of Health have found it necessary to order the removal of a number of nuisances and the cleansing of premises, and to quarantine for the contagious disease, diphtheria, considerably, and there had been but slight cause to resort to legal means to enforce any measure, and it seemed that nearly everyone appreciated that general cleanliness and quarantine regulations were enacted for their own good. The Board has found it necessary to notify and urge upon an unusual large number of the citizens to clean and cleanse, and place in a sanitary condition their premises, showing a rather large number of careless people in the village.

The past year has been an unusual one for sickness and death. The disease, diphtheria, since July 1st last, has been a persistent visitor and a constant dread to our people, and its form has been of a very malignant character; and, although the Board has done everything in its power to stop the spread of the disease, it has seemed to defy their efforts to a large extent. This disease has, within the past year, visited twenty-one families in the village, all of whom have been quarantined, and in those twenty-one families there have been fifty-three cases and twenty deaths—ten males and ten females, the youngest death being three years and seven months old, and the oldest twenty-one years and three months.

The Board expended during the year between May 1, 1887, and May 1, 1888, over four hundred dollars in cleaning the village of nuisances, sources of filth and causes of disease, in maintaining quarantine, furnishing nurses for poor people and for disinfectants. The quarantine was raised from the last case of diphtheria, on the twenty-seventh day of May last, since which time there has been no new cases reported to the Board.

Slaughter houses have required some attention, and in the month of July last the slaughter house near the bank of Rush Creek, west of the village, was destroyed and the creek through the village completely freed from offal and filth, and the further slaughtering on the banks of the creek, west of town, was forbidden. However it has been carried on to a small extent, contrary to the orders of the Board. At the present time the slaughter-houses of the village are in a good sanitary condition.

During the present spring, since May 1st, 1888, your Board has thoroughly inspected the village, and has found that sanitary matters are in a good and prosperous condition. Quite a number of orders were issued for the removal of nuisances and the digging of privy vaults. All of the former and most of the latter have been complied with. The larger slaughter-house pig pen in the east of town which has been, during the past year, a nuisance to a certain extent, has been removed and abated in accordance with the request of the Board. The Board is on a good working basis and ready to receive any instructions or suggestions from the council.

#### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF AUGUST. DISEASES OF MEN.

Diphtheria.....	{	cases, 62
		deaths, 18
Scarlatina.....	{	cases, 14
		deaths, 0

#### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	36
Reported during the month.....	10
Killed.....	12
Released.....	5

Remaining September 1st isolated or not accounted for..... 29

NOTE.—Most of these are cases exposed, and isolated for further observation.

SUPPLEMENT  
TO  
REPORT ON VITAL STATISTICS  
OF  
MINNESOTA.

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MONTHLY PROVISIONAL REPORTS OF BIRTHS  
AND DEATHS.

*Containing the Reports of Births and Deaths issued Monthly beginning with that for July 1888, with other matter relating to the Vital Statistics of the years 1886-87-88.*

Permission has been given to publish, with each number of Public Health, an abstract of the returns of Births and Deaths for the previous month. It is, of course, impossible to make these tables complete, because all the returns for a given month are not in my hands by the twentieth of the succeeding month, but a trial has shown that they are sufficiently accurate for the purpose intended to be subserved—to show the location, character, virulence, and mortality, of the diseases prevailing in the State.

Just as soon as a satisfactory method can be devised, it is proposed to publish a meteorological table with these provisional reports, and to adopt any other addition, or to make any change which will add to their value.

This is the first of the series showing these facts for the month of July, 1888.

SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Month, 1913.																			Total of each Disease.
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Measles .....																				15
Scarlatina.....																				6
Diphtheria.....																				29
Croup .....																				7
Whooping Cough..																				5
Typhoid Fever....																				18
Erysipelas.....																				15
Puerperal Disease.																				17
Diarrhoeal Disease																				10
Cholera Infantum.																				218
Meningitis .....																				54
Rheumatism .....																				3
Cancer.....																				20
Phthisic.....																				76
Other Tubercular Diseases.....																				10
Apoplexy and Par- alysis.....																				20
Insane .....																				7
Heart Disease.....																				26
Bronchitis.....																				25
Pneumonia and Pleurisy.....																				21
Enteritis .....																				37
Diseases of Urin- ary Organs .....																				14
Still Birth.....																				43
Inf'ntile D'bility } Premature Birth }																				89
Infantile Convuls- ions .....																				43
Old Age.....																				52
Violent Deaths....																				68
Unclassified .....																				50
Total Males.....																				
Total Females....																				
Grand Total.....																				



OF THE SECRETARY OF THE STATE BOARD OF HEALTH, (UP TO SEPTEMBER 15TH, 1888).

Per cent. of deaths during the month.	SEX.		SOCIAL STATE.				AGE.												NATIVITY.				PARENT NATIVITY.						Localities Invaded Counties.					
	Males.	Females.	Single.	Married.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp. Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.	Both Foreign.	American Father, Foreign Mother.		Foreign Father, American Mother.	Unknown.			
1.48	10	10	3	1	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	2	1	2	1	2	2	5	2	2	12	10	
.59	1	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	
4.54	27	19	19	1	1	1	5	3	4	5	11	1	1	1	1	1	1	1	1	1	1	12	5	5	4	2	2	19	1	3	2	31	23	
.49	1	4	4																			1	1	1	1	1	1	1	1	1	1	4	4	
1.77	14	9	3	2	2	3	1							3	1	2	1	1	1	1	1	1	1	4	9	1	1	3	7		6	10	9	
1.48	5	4	1	2	2	1	1	1	1	1	1	1	1	3	3	1	1	2			1	1	1	1	3	2	1	2		2	9	7		
1.68	17	17				2								10	5	1	1				1	2	1	5	9	2	11			1	3	12	12	
.98	4	1	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	1	1	3		1	5	5	
2155	116	116	86	18	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	77	13	20	5	1	15	76	5	1	15	23	19	
5.3	34	102	10	6	1	1	1	1	2	2	2	3	2	1	3	1	2				5	20	2	4	7	1	9	20	2	2	4	16	15	
3	20	20	7	1	2	2	4							2								10	3	3	4	4	10	1	2	3		3	3	
1.96	12	1	9	2	2	1	1	1						1	1	1	3	4	2			4	2	2	6	1	7	1	3	5	3	16	15	
7.5	37	14	11	6	6	1	1	1	2	2	2	4	15	6	8	7	5					4	3	13	18	1	5	22	1	1	8	44	82	
1.98	6	6	1	3	3	1	1	1	2	1	1	1	1	1	1	1	5					5	1	1	2	3	1		1	1	7	7		
1.96	14	3	3	3	1	1	1	1					2	1	2	1	3	5				1	1	4	9	4	8		5	1	2	15	14	
.69	4	2	2	2	1	1	1	1					1	1	1	1	1	1				1	3	3	2	1	5				4	2	2	
2.56	14	12	5	6	1	2	2	2	1	1	1	1	1	1	1	1	1	1				2	1	6	5	7	5				3	17	16	
2.45	17	16	10	1	1	10	1	3	1	1	1	1	1	1	1	1	1	1				11	2	3	1	1	3	12	1	1	1	9	8	
2.07	12	8	7	1	1	12	3	3	4	1	1	1	1	1	1	1	1	1				6	7	1	2	1	1	8	1	1	2	1	9	
3.64	17	14	2	1	1	3	1	2	1	1	3	3	2	2	2	1	3	3				6	1	6	4	1	6	11	5	11	3	19	16	
1.38	20	10	9	1	3	3	2	1	1	1	1	1	1	1	1	1	1	1				5	5	5	3	1	6	11	3	3	3	11	10	
4.73	8	6	1	5	1	2	2	2	2	2	2	2	2	2	2	2	2	2				3	1	2	3	3	3	3	3	3	3	3	3	
8.78	32	16	16	1	1	32	16	16	1	1	1	1	1	1	1	1	1	1				30	1	1	1	1	1	1	1	1	1	1	18	16
4.25	54	35	35	1	1	52	2	2	3	1	1	1	1	1	1	1	1	1				36	8	8	1	1	17	27	1	2	7	35	25	
5.13	28	15	15	1	1	24	4	1	1	1	1	1	1	1	1	1	1	1				28	4	2	1	1	24	1	1	1	1	1	1	1
6.71	26	12	13	1	1	4	2	1	2	1	1	1	1	1	1	1	1	1				19	5	4	1	1	5	20	1	1	1	1	1	1
4.9	30	3	14	10	3	15	1	1	1	1	1	1	1	1	1	1	1	1				12	1	1	1	1	2	11	1	1	1	1	1	1
576	430	99	27	20	241	46	21	3	10	19	19	14	58	30	27	16	35	27	5	6	250	50	116	148	12	101	337	12	21	105				
437	298	112	24	3	183	37	10	10	4	17	9	15	45	24	20	19	20	16	5	3	187	41	89	109	11	71	293	6	16	51				
576	437	228	214	51	23	424	83	31	13	14	36	28	20	108	54	46	35	55	42	10	9	437	91	205	257	28	172	630	18	37	156			

## MONTHLY STATEMENT OF BIRTHS—JULY, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO SEPTEMBER 15, 1888.

		GRAND TOTAL, 1772.	PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
PARENT NATIVITY.	NO. AT BIRTH.	SEX.	Males .....	53.72	1772	952	.....
			Females.....	46.00	.....	815	.....
			Unknown .....	.28	.....	.....	5
		COLOR.	White.....	99.94	1771	951	815
			Colored.....	.06	1	1	.....
			Unknown .....	.....	.....	.....	.....
		CONDI- TION.	Legitimate.....	99.10	1756	941	810
			Illegitimate.....	.90	16	11	5
			Unknown .....	.....	.....	.....	.....
		NO. AT BIRTH.	Single .....	97.29	1724	929	790
			Twins .....	2.71	48	23	25
			Triplets .....	.....	.....	.....	.....
			Unknown .....	.....	.....	.....	.....
		PARENT NATIVITY.	Both American.....	30.87	547	310	236
			Both Foreign.....	50.06	887	467	418
			Am'n Father—Foreign Mother....	4.74	84	40	44
			Foreign Father—Am'n Mother....	11.06	196	98	96
			Unknown .....	3.27	58	37	21

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH

AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

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VOL. IV. NO. 7.

SEPTEMBER, 1888.

WHOLE NO. 43.

**D**ISTRIBUTION AND MORTALITY OF SPECIFIED DISEASES IN MINNESOTA  
FOR THE MONTH OF SEPTEMBER, 1888.—*Scarlatina*—One death reported.

*Diphtheria*—17 deaths in 11 localities and in 10 counties; a marked diminution of deaths. Correspondence seems to indicate many cases, more widely distributed, and but few deaths. It has been more easily controlled.

*Typhoid Fever* is on the increase, but the mortality is not very large in proportion to cases. It is endemic in a few places, of which we shall have fuller details next month. Meanwhile let all Local Boards prepare for its possible coming, by a thorough overhauling of all notorious sources of impurity, notably the privy and cess-pool.

*Small Pox*.—In Wang Township, Renville County. Confined to two neighboring families, who are thoroughly isolated and cared for. Origin, foreign via. Quebec.

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF SEPTEMBER. DISEASES OF MEN.

Diphtheria.....	{ cases, 71
	{ deaths, 17
Scarlatina.....	{ cases, 2
	{ deaths, 1

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	29
Reported during the month.....	17
Killed.....	8
Released.....	3
Isolated.....	9

Remaining October 1st isolated or not accounted for..... 35

NOTE.—Most of these are cases exposed, and isolated for further observation.

**S**MALL POX APPEARED SEPTEMBER 3RD, IN THE TOWNSHIP OF  
WANG, Renville County, in the person of a woman just from Norway, via. Quebec. There was slight exposure of thirty-five people, all of whom were traced, vaccinated, or revaccinated, and kept under observation till fifteen days had elapsed. The only ones to suffer were in the family first affected, and another near by, between which intercourse was intimate, they being kindred. They are the only ones affected to date (October 16). The hus-

band of the first case is a leper (anesthetic form). He was vaccinated in childhood, but now has varioloid. On the occurrence of other than the first case, I visited the infected families and examined the cases with the Health Officer, Dr. Welch. Further precautions were taken, and in the evening met the citizens of Sacred Heart village, and agreed on plans for their protection, by the careful vaccination of all not protected by a previous one, and made arrangements for any emergency likely to arise. All promised hearty co-operation with the Health Officer, and no further spread of the disease is likely. Of course, all adjacent Boards of Health were notified as soon as the disease was recognized. The disease was probably taken before embarking. Dr. Montizambert Quarantine Officer of the Dominion, at Grosse Isle, on the St. Lawrence, is now endeavoring to trace it. Vaccination record will receive attention as soon as the entire record is complete.—H.

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THE AMERICAN PUBLIC HEALTH ASSOCIATION meeting, at Milwaukee, November 20-23, promises to be one of the best attended and most interesting ever held. The Yellow Fever epidemic, in Florida, will be described by Health Officers now dealing with it, and the discussions growing out of its consideration are likely to be interesting and important. The papers on other subjects of living interest already promised, are by representative Health Officers, and others directly interested in sanitary matters. The programme of every session is likely to be crowded with interesting and instructive essays and discussions. We hope for a goodly delegation of Minnesota representatives of Boards of Health.

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THE FALL IS THE TIME WHEN TYPHOID FEVER IS MOST PREVALENT AND FATAL.—It is already on an increase in Minnesota, and the attention of Boards of Health is called to the following Tract on the subject, which will be printed separately for the widest distribution. Chairmen and Health Officers will please notify the Secretary of the number they can use to advantage immediately.

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HOLES-IN-THE-GROUND.—Now is the time to insist on the removal of these causes of foul water, and breeders of the typhoid and other poison. The cool weather makes the work less offensive, and the opportunity should not be lost to renew the



effort for their steady removal and, in the absence of a sewer system, the substitution of the above ground tight box. The earth closet system, where the proper soil is available, is the best. There is no need of patented apparatus, the simplest are often the best. The circular on this system, is now ready for distribution, and any one can obtain them from their Local Board, or from this office.

### TYPHOID FEVER.

WHAT IS IT? HOW TO ESCAPE IT. HOW TO DEAL WITH IT.

IT is a form of continued fever, having a specific cause which escapes from the bodies of the sick in the discharges from the bowels. It is not known that it escapes in any other secretion or excretion.

This specific poison, in very minute amount, probably, if it get entrance into the digestive canal of a healthy person, who has not had a previous attack, is very likely to increase there till it induces the disease. The healthy body has, as against a single small amount of the poison, the power to successfully resist and expel, or destroy it. But the limit of such power it is impossible to know, so that the healthiest, as well as the feeblest, are interested in the entire prevention of the disease, or its extinction if it already exists.

People whose average of vitality is below the standard of health, and this is the actual condition of most of people in cities, are, just in proportion as they are below that standard, liable to an attack, in the presence of the poison, and its severity and fatality, other things being equal, will be largely affected by the same conditions. Outside himself, man is rendered susceptible to this and like diseases by any unhealthy condition of his food or drink, and they are liable to defilement by the careless disposal of the discharges from the sick of Typhoid Fever into "holes-in-the-ground" or even on its surface or into sewers. The getting of such excrement into drinking water is, probably, the commonest mode of the distribution of the poison of this disease. It may be into a spring, or brook, or river, a well or a cistern. It has been traced in milk fouled by the water in which the pail or can was washed, and it is not unlikely dried and distributed in the air, and probably in other ways, certainly by clothing soiled by the discharges. This brief summing up of a very important matter, points clearly to the means, at our disposal, to prevent or control Typhoid Fever. It is a "*filth disease*," as it has been expressively called.

*The first step in prevention* is a careful survey of the condition of the air, water and food supply of the household, or the community exposed to, or actually suffering from the disease. This, if faithfully done, will lead directly to the possible sources of impurity affecting them, and so to the mode of disposing of the refuse, animal and vegetable, of the house, and its inhabitants. These methods, as already stated, have directly to do with the prevention or occurrence of this disease. The discharges from the sick must be thoroughly disinfected—that is, the poison they contain must be destroyed immediately, and before they leave the sick room. The sick of this disease are, in this way, a constant danger to those who are well, in the same, and adjacent households, and often to others far away. It is for this reason that in all stages of the dis-

ease, they should be under the supervision of the Local Board of Health. If they are properly nursed in clean rooms, and beds, with abundant pure air, in quiet, and with suitable food, the chance of recovery is greatly increased, dangerous complications are avoided, and recovery is the rule. Fortunately these very arrangements, if united to the immediate disinfection of discharges, are just those which make the safety of others most certain. Quiet rest, with the least possible disturbance of body, or mind, are very important. There should be no going out for relief of the bowels, that should be done in the sick room into a vessel containing the disinfectant given below, which destroys odor and poison alike. And the discharges, so disinfected, should be buried by themselves. The vessel, thoroughly rinsed with boiling water, and again charged with the disinfectant, is again ready for use. Soiled clothing, sheets and the like, soaked in boiling water for ten minutes are ready for the usual washing. Boiling soap-suds are probably still better, making the washing easier.

So long as the disease lasts, all discharges must be treated in this way. The duration of the infection must be determined by the attending physician and Board of Health. There is no way so sure to cut short the prevalence of this disease as the simple method given above. The disinfecting solution is made in this way: Common chloride of lime, one quarter pound; water, one gallon. Mix thoroughly in a stone jar, keep in a cool place covered. When wanted for use stir up with a stick and put a tea cup of the mixture in the vessel before use. If the odor is not offensive, keep the vessel so charged, under the bed. Chlorine is given off slowly and so far as it goes will sweeten the partly stagnant air there. If the odor is offensive, keep the vessel covered till used.

If you have reason to suspect the purity of the water you drink, boiling and cooling before use, will destroy any of this poison it may contain. But the wisest course would be to make sure, by a careful examination, of the dangers to which that supply is exposed. If it is a well, make sure that there is no entrance for surface water, but that the supply comes from a known and pure source. If you drink the public supply, the Health Officer, or Board of Health, should be able to inform you.

It must never be forgotten that the most perfect health of which any one is capable, is a strong protection against all forms of disease, and that it is only possible when air, water and food are pure. Abundant sunlight, personal and domestic cleanliness are also essential. Still, with them all, typhoid fever may attack the healthiest who is exposed to its special cause. But, because of his good health such an one is better able to resist the attack, and more likely to escape, or come out of it with the least permanent injury. —H.

#### *SMALL POX IN WANGS TOWNSHIP, RENVILLE COUNTY.*

##### *A CASE OF LEPROSY HAS THE SMALL POX.*

ON September 9, C. A. Evenson, C. B. S., telegraphed case of small pox and asked for instructions. Same date, Secretary telegraphed Dr. E. J. Brown, of Minneapolis, to go to Wangs Township at once and report to C. A. Evenson, C. B. S., taking vaccine virus with him. Secretary telegraphed C. B. S. that Dr. Brown was coming. September 9, Dr. Welch, H. O. of Sacred Heart, who was attending the case, reported, that a suspected case was re-

ported to him September 8. He went immediately to the place and found it small pox. A woman, forty-five years old, arrived eight days ago from Norway, via Quebec. Eruption appeared five days ago. Number of exposures unknown, as persons exposed had visited village. Isolation at once established, and L. B. of H. notified. Have ordered virus and will commence vaccination to-morrow. September 10, Dr. Brown telegraphed from Sacred Heart: "One case of variola, ninth day; thirty-five persons exposed, in good condition. September 11, Secretary telegraphed Dr. Hand, to send humanized virus to Dr. Brown, Sacred Heart for use in free vaccination. September 12, Secretary reported the facts of this case developing here so soon after landing at Quebec, to Dr. Montizambert, Quarantine Officer, Grosse Isle, Canada, who is now investigating the matter. September 18, Dr. Welch reported: "No new cases. Am watching persons exposed. Most exposures sixteen days ago; seven twelve days ago." September 22, Dr. Welch reported: "Fourteen days passed since exposures. New cases improbable. Isolation strict. Husband of the case has the leprosy. Vaccination with virus furnished by you is free." September 23, Dr. Welch telegraphed: "Two more cases of small pox to-day. Come up." September 24, Secretary visited family infected, with the Health Officer. Met Local Board, and Members of Board of County Commissioners, and addressed a meeting of citizens of Sacred Heart in the evening, urging vaccination and stating the facts as to the cases, and that he had no fear of a spread if his instructions were followed. He made a careful review of all points of danger and such suggestions as observation showed to be needed. September 29, Dr. Welch reported: "New case. Husband of first case who also has the leprosy." Gives list of exposures outside of the two families. Vaccination worked on five and on twelve it failed. Disease confined to two houses. Sick all in one house. October 3 Dr. Welch reported: "All cases doing well. No new cases." October 9, Dr. Welch reported: "Girl sick when you were here died October 7. Baby in Johnson family sick October 6, and died October 9. It was vaccinated five times without success; once with animal virus from Chicago; once with that furnished by Dr. Brown; once with humanized virus from Dr. Hand; once with seventh day lymph, and once with virus I had. Virus from Dr. Hand worked well on child in this family, whom you vaccinated. October 18, two new cases in Johnson family—Mrs. Johnson and a little girl. Four more cases likely in Johnson family."

### INFECTIOUS DISEASES OF ANIMALS.

*Pink Eye in horses.*—September 25, Dr. Chilton, H. O. Howard Lake, telegraphed: "Eight cases catarrhal fever in horses here pronounced contagious by Dr. Lyford, V. S., of Minneapolis. Have quarantined livery stable." Same date, Secretary replied: "Keep horses isolated. Write facts in detail." September 25, H. O. reported: "First horse taken sick on 14th inst., died on morning of 17th, 3. a. m.: owned by party in Minneapolis, but had been here for some time, being driven around our county by wind mill agent. Horse was in excellent health before taking sick. Was kept and died at livery stable. Livery stable (Johnson's) has seventeen horses, eight of which are now sick, only one presenting serious symptoms. First of the eight were taken sick on Thursday, 20th inst.; balance showed symptoms one or two days since. They all seem to suffer about as follows, viz: Fever, disposition to frequent movement of bowels seems to be attended with pain. One horse's pain being severe and of a spasmodic character. Urine, high colored. Eyes, red, watery, and some discharge (slight) of muco purulent matter. Pulse, frequent and full. Horses are dull and listless in beginning, inability to move around. Legs, swollen and stiff. In case of geldings, the sheath is swollen, refuse to eat, or eat very sparingly. The horses that have been out on the road most of the time, are not sick; only those that have stayed in. Dr. C. C. Lyford, V. S., of Minneapolis, saw horses for the first time last night (24th). Up to this time had been treated by a quack. Dr. Lyford's diagnosis is catarrhal fever with muco-enteritis. He says that it is commonly called "pink eye." I quarantined barn this forenoon. No

horses are allowed to go in or out, except those not sick will be allowed to take moderate exercise out, being kept away from other stock. Dr. Lyford says that he never met with cases before where the symptoms were so uniform. None of them cough. One case reported from town of Victor, four miles out. I have just learned (but nothing reliable), that they have some trouble in Rockford Twp., 10 miles from here. Our county fair opened here to-day, and continues three days. A sharp outlook is being kept by the management for sick horses. Hard to get at cause of trouble. Probably of an epidemic nature. The horse that is so very sick here, (better this evening, with some prospect of recovery,) and the one that died, probably had an overdose of croton oil. Horse that died had not been with any sick horses that they knew of. Dr. Lyford thinks the trouble might be contracted in this barn a year from now if barn is not disinfected and thoroughly fumigated, all of which will be done when horses are well. Would suggest that you warn all Health Boards in this and McLeod Counties, to be on their guard and observe strict quarantine, if in your judgment you think best, as there is some disposition to fight it. Anything that you have to suggest to this Board will be cheerfully complied with. Allow me to suggest that you shake these Town Boards from center to circumference, so that they may be diligent, and then we can see what our efforts will bring forth. If there are any new developments, I will notify you at once."

September 27, Secretary notified 20 Boards adjacent of the existence of this disease, and wrote to the H. O.: "I have no doubt that the disease which you describe is what the best authors describe as influenza in its epidemic form. In this country it is called "pink eye," "epizootic," and a variety of other names, determined largely by the complications. The symptoms given by you correspond with the descriptions of the general disorder, and your measures are right, except that no contact should be permitted between infected animals and other animals, either in the barn or outside of it. Very strong doubts have been expressed as to its infectiousness; but I agree with you, that safety requires isolation of infected animals, and subsequent disinfection of stables."

### SANITARY QUESTIONS AND ANSWERS.

(T. C. abbreviation for Town Clerk; C. B. H. abbreviation for Chairman Board of Health; H. O. abbreviation for Health Officer; L. B. H. abbreviation for Local Board of Health.)

*Local Boards should examine into the facts concerning reported infectious disease.*—September 20, C. B. H. Minnetrista Twp., Hennepin County, wrote concerning diphtheria in his town: "Dr. Walker, (H. O. Excelsior,) told me that there were six cases of diphtheria now in three families; but he took all necessary steps to quarantine, etc. He thought there was no danger of spread. Please let me know whether or not it is the Supervisor's duty to look into the matter, if the doctor has done all that he thinks could be done." September 22, Secretary replied: "The doctor reported to this office, and also to you. His opinion is reliable. Section 18, Chapter 132, Laws of 1883, makes it the duty of a Local Board of Health, when they are informed that infectious disease exists in their locality, to immediately examine into the facts, and take such action as the law provides, and report the facts, and the action taken, to this office. As your Board are responsible in the matter, they should know the exact status of affairs, and act accordingly."

*How vaccination is made compulsory.*—September 25, H. O., Renville, writes that his station is but seven miles from Sacred Heart, near where small pox is, and asks whether he can compel vaccination. September 29, Secretary replied: There is no law directly compelling vaccination: but it can be made compulsory, indirectly, by isolating those who are unvaccinated in the face of a probable outbreak of small pox. (That is, those who have probably been exposed.) Make good use of the fact that cases exist near you, to induce everybody to accept vaccination."

*Diphtheria in Chatham Twp., Wright Co.—Successful work of a Local Board of Health.*—August 9, Dr. Brigham, H. O. of Buffalo, reported "Diphtheria is



raging severely in the town of Chatham. It has assumed a threatening aspect" Aug. 11, Secretary acknowledged receipt of report, and wrote to the C. B. H. for the facts and the action of their Board. Aug. 14, the C. B. H. reported: "In regard to the diphtheria outbreak in Mr. F——'s family, there have been four of them down with it. One of them died, and another is very near dead, and the rest getting better. Dr. R. O. C——, the attending physician, pronounced it black diphtheria, and immediately after I received the notice, I consulted with the Board of Health of said town, and put up notices on said F——'s house and store and the post office, which are all in one building, and posted a guard before said house, and till such order be revoked by said Town Board of Health. I also notified F—— not to leave the house. August 22, Secretary acknowledged receipt and sent a file of diphtheria circulars and copies of the law. August 23, Dr. Brigham wrote: "Being employed by the Board of Health of the town of Chatham, Wright county, while diphtheria continued, I take pleasure in reporting that the disease, while of a violent character, has abated. The Local Board, when notified of the existence of the disease, immediately quarantined the house, closed the store and post office—which were in the same building and connected—placed a guard on the premises who permitted no one to leave or enter. When I arrived, I fumigated the house by burning sulphur and boiling carbolic acid; had the place thoroughly cleansed from cellar to garret; soiled bedding and wearing apparel burned, and in fact enjoined strict compliance to all sanitary regulations. Three children died, two before any precautions were taken, and almost without medical assistance. The third (an infant) died soon after, and three of the same family recovered, while two other cases occurred in the house near by, both recovered. We believe the disease is virtually conquered, but will maintain a strict quarantine until all danger of communication is past."

*Vital Statistics—Opinion of Attorney General on Costs of Prosecution, and who Prosecutes.*—In reply to the inquiry of a Town Clerk, complaining of the neglect of heads of families to return births and deaths, and asking as to whose duty it is to enforce the law, and as to the costs of suit, the Attorney General writes:

STATE OF MINNESOTA, ATTORNEY GENERAL'S OFFICE, }  
St. PAUL, September 11, 1888. }

C. N. Hewitt, M. D., Red Wing, Minn.

DEAR SIR:—Replying to yours containing letter of D. Williams, which is herewith returned. I have to say: First, the law does not designate any particular officer who shall make complaints for violation of the law in question. It prescribes the duties of parents and physicians, and prescribes penalty for their failing to comply with the duty prescribed, and it becomes the duty of anyone, and especially the duty of any officer, to make complaint when such violations occur. The complaint should be made to the County Attorney, whose duty it is to prosecute. \* \* \* As to liability for costs, practically there would be little liability, as a Justice would hardly certify that an action was brought without probable cause, when brought under the direction of the County Attorney. I am very respectfully yours,

MOSES E. CLAPP.

#### MAY SANITARY INSPECTIONS.

LANESBORO (V.) FILLMORE CO., DR. J. C. HVOSLEF, H. O., JULY 5, 1888.—The orders from the Local Board of Health, to clean the alleys and yards, this spring, have, generally, been complied with. Still, our village was laid out and built in a very inconvenient manner, making the lots too small and preventing, in many instances, the possibility of proper drainage. The wells seem, in different places to be in too close proximity to privies and places where slops are thrown. The Local Board of Health has been well aware of these unfavorable circumstances but has, on account of irremediable difficulties, unable to correct the evils as much as desirable. The council of the village, I hope, will, as soon as possible, furnish the plan wanted by the State Board of Health.

KASSON (V.) DODGE CO., DR. H. T. TURNER, H. O., JUNE 11, 1888.—Your Local Board of

Health herewith make their annual report, which should, according to law, have been made in May, but owing to the lateness of the season, and excessive amount of rainfall, we have been unable to make our sanitary inspection until May and June.

Owing to the efficiency of your street commissioner the surface drainage of our village is most complete with one exception, that is in the east part south of Mr. J. Stout's residence. A box drain running southeast into Mr. Bunker's field is necessary, as nearly all the cellars and surface drainage in that part of the village, north of said point and east of Montorville street, flows to that point. We deem it important that efficient drainage be provided for the same as a sanitary measure to prevent disease.

The alley through blocks 13, 14 and 15, in the rear of Main street, between Mantorville street on the east, and Owen street on the west, was in a most filthy condition. In an adjacent thereto, there is thirty-one (31) privies, and eleven (11) wells. All the privies have vaults in the ground, excepting two which have boxes. These privies have been moved from time to time until there now exists, (as near as your Board can ascertain by inquiry) not less than seventy-seven (77) full vaults varying from two to four feet deep including those in sight within this small space of territory. Of the eleven (11) wells all but two bear unmistakable signs of privy vault excreta.

Owing to the above facts, we have declared the vault system to privies a nuisance and forbid the digging of any more vaults in the above described territory, and am happy to report that with two or three exceptions those mostly interested do heartily agree with us in our decisions.

We sincerely hope that the citizens of the whole village will let their better judgment come to the front, and bring such an influence to bear on your honorable body that will warrant you in passing an ordinance forbidding the digging of privy vaults within the city limits. The Health Officer will willingly give citizens such information upon this subject as is recommended by the State Board of Health, who have made sanitary science in this respect a life long study.

In making the sanitary inspection of our public school building we deem it necessary to whitewash or calcimine the walls and paint the wood work at least once a year, and would say here that public state buildings adopt this plan at least once a year, some twice, as a sanitary measure necessary to health. Why should not our public school building undergo the same process of purification?

The public school privy vaults we declare a nuisance and have notified the school board to clean them out and disinfect the empty vaults then fill them with earth. The excreta deposited there must be disposed of some other way than in a vault, and we hope the citizens will sustain and encourage the board of education in their laudible efforts to remove that deathhole from our public school knowing the vulnerability of childhood to contagion. The importance of this matter cannot be overestimated. Let us make our school building and surroundings sanitarily perfect. A wise community will invest their hard earned dollars in this way rather than in a lot in the cemetery.

Owing to the late and wet spring our inspection has necessarily had to be more minute and to some, seemingly arbitrary, in order to come up to the requirements of the State Board of Health; but we have and will try and do our duty with partiality to none.

HERMAN (V.) GRANT CO., DR. W. R. HAND, H. O., JUNE 7, 1888.—The May inspection was very late this year owing to a wet late spring and the large accumulation of a long, cold winter which at last has been satisfactorily finished, leaving the town in good order in all respects. The water supply is better than usual.

DELANO, (V.) T. J. CATLIN, M. D., H. O., August 21, 1888.—On inspection to-day, I find the village in much better sanitary condition, in many respects, than on former occasions. Yet there is work to be done. Some of our alleys and back lots are made dumping ground for manure, slops and other refuse material; privies are the "hole-in-the-ground" kind, and are too near houses and wells for comfort and health. Several vacant lots contain pools of stagnant water, while an occasional pig-pen adds to the foul and unhealthy odor arising to breed typhoid fever, diphtheria, diarrhoea and like troubles, all of which, with other things, call for our attention. The vital statistics have been fully reported and properly recorded. During the spring on account of several deaths from measles or its sequelæ, the death roll kept pace with the birth roll up to June 30 from January 1, there being 15 of each. Aside from this good health has prevailed.

The furnace in the school house, in the interest of health, should have the latest improvements attached or be replaced by a new one before school begins.

MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, Oct. 20, 1888.

Monthly Supplement to Report on Vital Statistics, }  
No. 2, August, 1888. }

*Deaths from all causes:* July, 1,013; August, 1,216.

The large proportion of infant deaths will be found partly accounted for in the following tables.

PER CENT. OF DEATHS UNDER 5, BY YEARS, TO TOTAL DEATHS  
OF ALL AGES.

AGES.	JULY.		AUGUST.	
	Totals.	Per Cent.	Totals.	Per Cent.
Under 1.....	424	41.85	518	42.6
1-2.....	83	8.19	129	10.61
2-3.....	31	3.06	35	2.87
3-4.....	13	1.28	18	1.48
4-5.....	14	1.38	15	1.23
Totals.....	565	55.76	715	58.79

Looking for the causes of this mortality we find the leading disease to be the bowel affections classed, under 5 years of age, as *Cholera Infantum*.

According to age its mortality was:

AGES.	JULY.	AUGUST.
Under 1.....	178	262
1-2.....	28	67
2-3.....	4	12
3-4.....	4	7
4-5.....	1	....
Totals.....	215	348

Next in order of fatality is *Infantile Debility*, a very vague and unsatisfactory classification which must be corrected if we are ever to get at the removable causes of infant mortality:

AGES.	JULY.	AUGUST.
Under 1.....	83	111
1-2.....	5	7
Totals.....	88	118

*Still Birth* is worth mention as an unreliable death cause. The term covers premature births, births at full time born dead, or dying in the act of birth. Until midwives are held to a strict accountability, the causes of death in infancy will be difficult to discover and classify. The blame rests very often with parents who do not call for medical help for very young children, among the foreign population.

(Continued on page 8.)

SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Month, 1216.																			Total of each Disease.
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Measles .....	[Bar from 0 to 10]																			10
Scarlatina.....	[Bar from 0 to 2]																			4
Diphtheria.....	[Bar from 0 to 49]																			49
Croup .....	[Bar from 0 to 10]																			10
Whooping Cough..	[Bar from 0 to 17]																			17
Typhoid Fever....	[Bar from 0 to 45]																			45
Erysipelas.....	[Bar from 0 to 8]																			8
Puerperal Disease.	[Bar from 0 to 8]																			8
Diarrhœal Disease	[Bar from 0 to 20]																			20
Cholera Infantum.	[Bar from 0 to 346]																			346
Meningitis .....	[Bar from 0 to 33]																			33
Rheumatism .....	[Bar from 0 to 2]																			2
Cancer.....	[Bar from 0 to 20]																			20
Phthisis.....	[Bar from 0 to 109]																			109
Other Tubercular Diseases.....	[Bar from 0 to 11]																			11
Apoplexy and Par- alysis.....	[Bar from 0 to 14]																			14
Insane .....	[Bar from 0 to 13]																			13
Heart Disease....	[Bar from 0 to 42]																			42
Bronchitis.....	[Bar from 0 to 12]																			12
Pneumonia and Pleurisy.....	[Bar from 0 to 30]																			30
Enteritis .....	[Bar from 0 to 13]																			13
Diseases of Urin- ary Organs .....	[Bar from 0 to 15]																			15
Still Birth.....	[Bar from 0 to 39]																			39
Infantile D'bility & Premature Birth &	[Bar from 0 to 120]																			120
Infantile Convuls- ions .....	[Bar from 0 to 38]																			38
Old Age.....	[Bar from 0 to 66]																			66
Violent Deaths...	[Bar from 0 to 54]																			54
Unclassified .....	[Bar from 0 to 62]																			62
Total Males.....																				
Total Females....																				
Grand Total.....																				



OF THE SECRETARY OF THE STATE BOARD OF HEALTH, (UP TO OCTOBER 15TH, 1888).

Per cent. of deaths during the month.	SEX.		SOCIAL STATE.					AGE.											NATIVITY.					PARENT NATIVITY.					Localities Invaded counties.									
	Males.	Females.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City. Village or Tp.	Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.		Both Foreign.	American Father.	Foreign Mother.	Foreign Father.	American Mother.	Unknown.			
.9	3	3	3	3	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
.32	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
4.85	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	17	11	8	4	1	4	26	3	2	2	2	2	2	2	2	2	
1.39	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	9	8	4	4	1	1	18	7	3	1	1	1	1	1	1	1	
3.7	29	17	5	1	1	1	6	3	1	1	1	1	1	1	3	7	11	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
.65	2	16	9	4	1	1	1	1	1	1	1	1	1	1	3	6	4	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
.65	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
1.64	10	10	5	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2845	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	1	130	35	27	7	44	121	6	18	10	10	10	10	10	10	10	
3.13	21	147	20	1	1	1	107	32	5	2	1	1	1	1	1	1	1	1	1	1	1	1	106	14	24	3	20	104	4	12	7	66	45	45	45	45	45	
16	17	15	2	1	1	1	10	3	1	1	1	1	1	1	2	1	1	1	1	1	1	1	11	3	1	2	5	8	1	2	1	15	12	1	1	1	1	
1.64	10	10	9	1	1	1	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8.96	46	30	13	2	2	2	23	3	1	2	3	1	1	1	1	1	1	1	1	1	1	7	7	3	7	2	6	27	13	13	6	57	37	37	37	37	37	
.9	5	3	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1.15	9	5	6	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1.05	8	5	4	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3.15	21	7	10	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
.99	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2.46	15	10	5	4	3	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1.06	11	15	11	4	4	4	6	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1.21	8	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3.21	25	14	14	14	14	14	25	14	14	14	14	14	14	14	14	14	14	14	14	14	14	25	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
9.89	65	55	55	55	55	55	65	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	65	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
3.13	18	20	20	20	20	20	12	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	40	3	1	12	34	2	3	4	53	38	38	38	38	38	
5.42	37	19	16	1	1	1	13	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	14	21	2	4	14	10	1	1	1	1	1	1	1	1	1	1
4.44	49	28	14	2	5	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	6	14	17	21	1	11	25	1	1	1	1	1	1	1	1	1
5.1	80	20	10	1	1	1	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	6	3	6	15	9	14	1	1	1	1	1	1	1	1	1	1
	32	11	15	6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	8	1	8	15	5	19	1	1	1	1	1	1	1	1	1	1	1
675	518	107	26	24	294	64	19	6	9	28	12	13	46	47	25	37	23	26	13	13	201	86	133	154	11	133	380	20	30	112	112	112	112	112	112	112	112	
	541	391	106	37	7	224	65	16	12	6	17	10	20	47	36	19	15	21	14	15	4	256	66	105	110	4	108	331	13	30	59	59	59	59	59	59	59	59
675	541	909	213	63	31	518	121	35	18	15	45	22	33	98	88	44	52	44	40	28	17	547	171	238	264	15	241	711	33	60	171	171	171	171	171	171	171	171

(Continued from page 5.)

*Infectious diseases* had very little to do with infant mortality:

DISEASE.	JULY.	AUGUST.
Measles .....	9	8
Scarlet Fever .....	5	2
Diphtheria .....	13	21
Totals .....	27	31

It was caused by diseases which are now known as preventible, and are largely associated with causes operating in, or close to, the home.

Our tables give a fair estimate of the distribution of diseases (including all ages):

NAME.	JULY.		AUGUST.	
	Localities.	Counties.	Localities.	Counties.
Cholera Infantum .....	23	19	66	45
Infantile Debility .....	35	25	53	36
Measles .....	12	10	8	8
Scarlatina .....	4	4	3	3
Diphtheria .....	34	23	28	23

## MONTHLY STATEMENT OF BIRTHS—AUGUST, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO OCTOBER 15, 1888.)

GRAND TOTAL, 1916.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
SEX.	Males .....	51.31	1916	983		
	Females .....	48.43			928	
	Unknown .....	.26				5
COLOR.	White .....	100.00	1916	983	928	5
	Colored .....					
	Unknown .....					
CONDI- TION.	Legitimate .....	99.58	1908	977	926	5
	Illegitimate .....	.26	5	3	2	
	Unknown .....	.16	3	3		
NO. AT BIRTH.	Single .....	97.49	1868	954	909	5
	Twins .....	2.51	48	29	19	
	Triplets .....					
	Unknown .....					
PARENT NATIVITY.	Both American .....	90.27	580	295	284	1
	Both Foreign .....	52.52	1006	510	493	3
	Am'n Father—Foreign Mother .....	5.42	104	47	56	1
	Foreign Father—Am'n Mother .....	9.08	174	96	78	
	Unknown .....	2.71	52	35	17	

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

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VOL. IV. NO. 8.

OCTOBER, 1888.

WHOLE NO. 44.

## DISTRIBUTION, AND MORTALITY OF SPECIFIED DISEASES IN MINNESOTA, FOR THE MONTH OF OCTOBER, 1888:

*Measles and Scarlatina* slowly increasing, *Diphtheria* markedly so. There were from the last, 64 deaths in 24 localities, and 19 counties, in September, while for this month there are reported 80 deaths in 27 localities.

*Croup*—9 deaths in September, 20 in October.

*Typhoid Fever*—84 deaths last month to 114 in October. In 19 localities then, to 29 now. We repeat the warning of last month, and call earnest attention to the circular published then, and the further notice below. Send for as many copies of the circular as you can use for distribution.

*Erysipelas*—Slight mortality, but 4 deaths and in 4 localities.

*Puerperal Diseases*—Same as last month.

*Diarrhæal Diseases of Children*—A very large reduction, 187 deaths in September, to 52 in October.

### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF OCTOBER. DISEASES OF MEN.

Diphtheria.....	{	cases, 118
		deaths, 39
Scarlatina.....	{	cases, 21
		deaths, 2

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	35
Reported during the month.....	7
Killed.....	10
Released.....	1
Isolated.....	3

Remaining November 1st isolated or not accounted for..... 31

NOTE.—Most of these are cases exposed, and isolated for further observation.

**TYPHOID FEVER** is busy teaching its old lesson of cleanliness by the sickness, disability, and death, which follow its attack. The mortality for this month (114) and since its annual outbreak began, ought to be enough to awaken the most hardened to a new effort for its reduction.

*The first thing to do for its control, and the most certain, is to*

*disinfect the discharges of its victims before they are permitted to leave the sick room.* The observance of this simple rule would do more than anything else to prevent its spread from known cases. If this truth can be widely known—become the popular belief—many other cases will be prevented and we shall have taken a long step towards the permanent reduction of the sickness and death rate from this cause.

*The leading, specific, danger from impure drinking water,* is the presence of the Typhoid Fever poison. It might be very largely diminished by the disinfection of discharges as above proposed.

The dry earth closet affords the opportunity to disinfect all excreta, by the addition of chloride of lime to its contents, if suspected to contain typhoid discharges, and so, where in use, to prevent, absolutely, the danger of any such matter getting into water supplies, having other than a surface origin.

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DIPHTHERIA is increasing and Local Boards will be very careful to look after all suspected cases till reliable medical opinion declares them free of the disease. We must not forget that nothing can take the place of strict isolation of the patient, and of all in direct relation to him. It is a very important measure, when possible, to remove the children who are well, from the infected house, to a family where are no small children. This has repeatedly saved them from the disease. In small houses the infection seems intensified, at times, to a fearful malignancy, which has, more than once, killed all the children there. We hope that this fact will result in the establishment of Isolation Homes where the sick child and its mother, or other nurse, can find every comfort and care, to their mutual advantage, and the increased safety of the rest of the family, and of the community. Till then, we must do the best possible, and that is the removal of the well children to a place of safety. Health Officers and Chairmen of Local Boards, have no alternative than to insist that physicians and parents notify them immediately of the existence of the disease in their care, as prompt isolation is the most important step for the safety of the community.

After the disease has disappeared, thorough disinfection of persons, clothing, bedding, and all contents of the infected room is of the utmost importance. The infection is long lived in old houses,



and in damp ones, of any age. It is long lived, too, in infected clothing packed away in trunks, drawers, and closets, and has, repeatedly, in Minnesota, been carried in such clothing, long distances with fatal results.

A SUSPICIOUS DISEASE OF CATTLE in different localities of the State, in September and October, occasioned a good deal of anxiety. The investigation was prompt, thorough and satisfactory. We had the ready co-operation of the Bureau of Animal Industry, through an inspector, Dr. Talbot, who, after visiting the suspected herds in Pine County, endorsed the opinion of Dr. Sandberg, who made an inspection at the request of the Secretary of this Board. Suspecting the affection to be due to something in the pasture occupied by the cattle, Dr. Sandberg, who is an expert botanist, was asked to examine the matter from that point of view. His report is a clear statement of his investigation and a good example of professional work. He traces the affection to a poisonous vegetable by the history and symptoms, but was unable to find the particular plant. A fungus which was found on many plants was, after examination by the Botanist of the Agricultural Department at Washington, declared to be harmless. It lives in the lowlands and swamps, to which the cattle, for lack of other pasture, were driven. Mr. Morford, Town Clerk of Deerwood Township, Crow Wing County, whose letter will be found with Dr. Sandberg's, puts the facts from the standpoint of a practical cattle breeder, in a very convincing way. It is a capital illustration of the fact that the *prevention* of disease in stock should be as much a study with farmers, as the prevention of disease in their own families, and that it is risky business to compel stock to graze in swamps, and marshes. The malignant catarrh of cattle so fatal in various parts of the State was traced, last year, to the same cause, and has occasioned many deaths. It ceased when the cattle were kept away from the marshy land immediately around certain swampy lakes.

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IMPORTANT TO LUMBERMEN AND OTHERS EMPLOYING MEN  
IN CAMPS.

(Reprint of a circular letter to Lumber Firms.)

I AM instructed to ask your immediate attention to the necessity of knowing that the men you employ this winter are thoroughly protected by vaccination against Small Pox. This disease is again prevailing in places adjacent

to the lines of travel both in Canada and the United States. It was brought directly through the Canadian quarantine to a township in this State last August, and resulted in eight cases and three deaths. To avoid the terrible experience of a few years ago, vaccination is the sure safeguard. It is as much for the benefit of the men as for yourselves and the people at large. To be safe, therefore, re-vaccinate every one who has not had a successful vaccination within the last five years, and can show a good scar as evidence thereof.

Your foremen should keep a list of the men, in this respect, and should be on their guard against any eruptive disease appearing among them. Instruct them to isolate any one having suspicious symptoms, with their clothing and bedding, till a medical opinion, or sufficient time shall develop their true character. I will advise any one of them, promptly, who will write me for the purpose, and will be obliged for the earliest information of anything suspicious, that we may give assistance where needed.

Very respectfully yours,

CHARLES N. HEWITT, M. D.,  
Secretary State Board of Health.

SCARLATINA IMPORTED FROM DAKOTA, SPREAD BY MEANS OF BORROWED BOOKS AND SUCCESSFULLY DEALT WITH BY A LOCAL BOARD OF HEALTH. The following reports from the Health Officer at Lanesboro, Fillmore Co., Dr. J. C. Hvoslaf, explain themselves and show how the disease was brought from Dakota, and spread by means of books borrowed from the first infected family, and how the infection was crushed out by prompt and vigorous action of the Local Board of Health:

LANESBORO, Oct. 8, 1888.

"In the beginning of September Scarlatina was brought from Dakota to a family in this village. Three children were taken sick but the disease was so mild that only one of them had to remain in bed for a couple of days. They were immediately quarantined and no other cases have appeared. After having disinfected as thoroughly as possible we are now soon going to discontinue the isolation."

LANESBORO, Oct. 18, 1888.

"Last night I was called to a new case of Scarlatina. Without my knowledge, some books were brought from the first infected house to another place, and in due time, after the receipt of those books, one member of the second household was taken sick with the disease. As soon as I heard of this case I immediately ordered quarantine and am now watching its strict observance. But the disease is now likely going to spread."

LANESBORO, Nov. 2, 1888.

"There have been no new cases of Scarlatina since I mailed my last letter to you. We are keeping up the quarantine as strictly as possible, but unless something new should come on, we intend to discontinue it on Wednesday next, November 7th."

#### *DISEASES OF ANIMALS.*

##### SUSPICIOUS DISEASE AMONG HORSES AND CATTLE IN PINE COUNTY.

SEPTEMBER 4, Hance Lawson, Louk, Polk Co., Wis., reported to Governor McGill, (referred by him to the Secretary of the State Board,) the foot and mouth disease was raging among cattle in Polk and Burnett Coun-

ties, Wisconsin, and that diseased animals were being shipped to Stillwater, St. Paul, Duluth and Taylor's Falls. September 6, Secretary notified Health Officers of those cities to be on lookout for such animals, and September 7, telegraphed State Veterinary Surgeon, of Wisconsin, for facts. September 13, State Veterinary Surgeon of Wisconsin, reported: "Have just returned from Polk County, where I find the disease to which you refer, affecting a large number of cattle and horses. I have looked the matter up very carefully and am satisfied that the whole trouble is due to ergotism, or similar vegetable poison. The condition and symptoms seem to be identical with those shown in the Kansas outbreak of 1884. See report of Bureau of Animal Industry for 1884, page 172."

September 10, Town Clerk, Rock Creek Township, Pine County, (adjoining Burnett County, Wis.) reported, "suspicious disease among cattle and horses rapidly spreading. Has Local Board of Health authority to isolate sick and exposed? First symptoms, sore mouth; next, tongue has appearance of being parboiled; their hoof begin to rot; cannot eat well, and become poor. No deaths yet in this town. Please advise." September 17, Secretary telegraphed: "Isolate sick or suspected animals. Notify adjacent towns. Telegraph names of affected towns." September 18, Secretary referred copies of reports from Mr. Lawson and Town Clerk to Dr. Salmon, Chief of Bureau of Animal Industry, for his opinion as to the nature of the disease. September 14, on receipt of report of State Veterinary Surgeon of Wisconsin, Secretary telegraphed Dr. Salmon: "Atkinson reports ergotism is affecting large number cattle and horses. Same here. Send inspector familiar with the disease." September 14, Secretary requested Dr. Sandberg, who had examined other outbreaks in this respect, to make a botanical investigation in the infected district. Sept. 15, Dr. Salmon telegraphed: "Have telegraphed Dr. Talbot to investigate disease as requested." September 16, Town Clerk reported: "Disease on the mend. No new cases, and those existing are improving since frost. Dr. Sandberg has been here." September 17, Dr. Sandberg reported:—

MINNEAPOLIS, MINN., September 17, 1888.

*C. N. Hewitt, Secretary State Board of Health,*

DEAR DOCTOR:—In accordance with your instructions in your letter of the 14th inst., in regard to a cattle disease in Rock Creek Township, Pine County, and adjacent towns, I started for Rush City Saturday night, and early next morning went with team to some of the infected herds. A steady rain made it very inconvenient to examine the features very thoroughly. First place I visited was Gust Deistings, of Rock Creek Township. He had had four cows and two horses sick, but are nearly well now. Had been sick only four days. The horses had a few healthy ulcers on the inside of the lower lip. The symptoms as near as I could find out, in all the cases, are as following: First sign is small ulcers on the outside of the nose. (these outside ulcers are only on the nose, as far as I could discover.) These are covered in a short time with a yellowish crust. Next day or two after, the ulcers commence to show themselves on the inside of the lips, gums and tongue. These ulcers are covered in a few hours with a gelatinous membrane of a yellowish-white color, something like a diphtheritic membrane, but not as hard or solid. This membrane sometimes covers the whole mucous membrane of the mouth and tongue in a few days, or weeks, as the case might be, then sloughs off, and leaves a healthy looking ulcer beneath; then a good deal of slobbering during this time, and the animal does not eat. As soon as the ulcers commence to heal, it regains its appetite. There is no diarrhea or any constitutional symptoms, no lameness or diseases of the

feet except in a few cases noted below; the loss of their appetite is a purely mechanical one. As soon as they are taken away from the pastures and put in the stables or removed to tame pastures, the disease disappears spontaneously. Mr. Deisting's pasture is both tame and woodland pasture. I examined his hay (clover and timothy) very carefully for ergot or fungi, but could not detect any, but in the woodland pasture, especially around stumps, where vegetation had been left undisturbed, the leaves of different species of plants were covered more or less with an orange colored fungi; in some patches *every* plant had more or less fungi attached to it. Wherever the cattle had been kept in the stables or in tame pastures, where there were not many wild weeds, or in those wild pastures where the fungi were not prevalent, or if any, in a very small degree, no disease occurred. As was the case in Mr. Chas. Knight's, a neighbor of Deisting; he had twelve head pasturing in a tame pasture, and none had it. While his brother, Aleck Knight, right across the road from him, had his cattle in a woodland pasture and all his contracted the disease. Also in Geo. Doremer's herd, none was taken sick. He had his in a wild pasture, but the fungi was very scarce, hardly any could be found, only here and there a single one. When I was at Deisting's, one of the neighbors spoke of a cow at Rock Creek Station, who was lame in the hind foot from the disease. I went there but found it of a traumatic origin. But at McKay's, next neighbor of Deisting, one horse and one cow was lame; if it was caused by this mouth disease or not, I could not tell. They had the ulcerated mouth, and three days afterward were taken with chills and profuse perspiration and then lameness. On inspection, small ulcers would show themselves just above the hoof where it joins the hairy epidermis; those ulcers would not extend any higher up but would spread later along so as to surround the whole hoof and would emit a very offensive smell. When I saw the horse the ulcers were healing, but what is called the "Frog" was loose so that you could put your finger underneath it, but there was no pus. He had a cow that was taken the same way, but was now all right. The lameness occurred always in the hind feet. In McKay's horse the whole upper surface of the tongue peeled off at once, but leaving the under surface clean and healthy. This was the only case where was any foot trouble as far as I could learn.

At Josef Pierce's place two cows and one horse were sick; on one of his cows a large piece of slough was detaching itself, about the size of a man's finger. I could not detect any bad odor.

On my way home, I heard of a case where the whole bag and teats were covered with those ulcers, but as it was six or seven miles, my time would not allow me to go there.

There has been no death during the whole time, so it is not very fatal. No young stock has taken it so far, and as near as I could find out it is *not* contagious, as horses who eat from the same manger as diseased horses did not catch it. Why cattle never showed any ulcers on the outside is their constant licking their nose which might prevent the fungi, if it is the fungi that causes the disease, staying any length of time on the outside.

This season has been unusually favorable for the growth of every kind of vegetation, both high and low, and especially for fungi, the copious rain we had in July, followed by extreme hot weather, with heavy dews and without much wind, is just such a season as the fungi like, and the farmers say that the grain and grass were covered all over with rust. I send you samples of the weeds.

I told Geo. Doremus, the Town Clerk, not to quarantine any cattle until he heard from you, as it would be very bad for the farmers to have to shut up all their stock now.

My report is rather a rambling one, which you must excuse, as my time was very limited. You might try to inoculate some of the fungi sent you, on cattle, and see the effect. Ergot I could not find anywhere in either dry hay or green fodder.

Respectfully,

J. H. SANDBERG.



DISEASE OF CATTLE REPORTED IN DEER WOOD TOWNSHIP, CROW WING COUNTY,  
INVESTIGATED BY THE STATE BOARD.

The following letter to Governor McGill, was referred by him to the Secretary, October 15, 1888:

DEER WOOD, MINN., October 13, 1888.

*Hon. Gov. McGill, St. Paul.*

DEAR SIR:—Some disease has broken out among the cattle here, and they are dying fast. We are all poor farmers, and the loss is serious. Does the State not provide money and an official to investigate such things? If so, would you kindly have the disease investigated, so, if any cure for it, we can avail ourselves of it. Awaiting a reply,

Yours Respectfully,

LOUISE S.

October 16, 1888, the Secretary referred the matter to the Local Board of Health of Deer Wood, who reported as follows:

DEER WOOD, MINN., October 19, 1888.

*Charles N. Hewitt, M. D.*

DEAR SIR:—Yours of 16th to our Chairman, in regard to disease among cattle here, was handed to me for reply, as he cannot write well in English. *There is no disease* among the cattle here at all. Had I supposed there was I would have communicated with you at once, as I have a very valuable herd of Jerseys; but as soon as I heard of the sickness, I at once began an investigation and satisfied myself that the cattle were poisoned from something they had eaten in the woods; and time confirms me in this opinion. \* \* \* \* We have had a severe drought this year, so that by the last of September, our pastures were used up. I have been feeding since October 1, same as I would in January. But these men forced their stock to pick up a living in the woods and swamps, or starve, so that they could have more hay to sell in the spring. The consequence is that they have eaten some slow poison. A. S. lost a steer; but his mate, under treatment, is now almost well. John C. lost two calves; and John B. lost a cow and a calf. He had another cow *very* sick, but she is now nearly well. This is the result of our Chairman's investigations yesterday. It is now over three weeks since they first showed sickness, and there has not been another sick animal in this or adjoining townships, that we have heard of. The man who dressed the steer for S., told me that in the stomach he found some undigested substance that looked like the stems of toad stools.

Respectfully,

R. H. MORFORD, Town Clerk.

The report was also submitted to the chairman of the adjoining town of Nordland, who replied:

AITKIN, October 29, 1888.

*Dr. Hewitt.*

DEAR SIR:—The cattle of our town do not suffer from any kind of disease. They are all well.

Respectfully,

P. J. EKLUND, Chairman.

AN ACT TO AMEND CHAPTER ONE HUNDRED AND THIRTY-TWO (132) OF THE GENERAL LAWS OF ONE THOUSAND EIGHT HUNDRED AND EIGHTY-THREE, (1883) RELATING TO BOARDS OF HEALTH.—CHAPTER 4, LAWS OF 1885.

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. That section four (4) of chapter one hundred and thirty-two (132) of the General Laws of one thousand eight hundred and eighty-three (1883) be and the same is hereby amended so as to read as follows: "The town supervisors of each town together with a physician, to be employed by said supervisors when in their judgment necessary, or when ordered by the state board of health, shall constitute a board of health and all villages, boroughs and cities shall have a board of health, to be chosen and to consist of the number hereafter provided, any thing in the charter of any such village, borough or city to the contrary notwithstanding; such boards shall, within their respective towns, villages, boroughs and cities, have and exercise all the powers necessary for preservation of the public health. Said village, borough or city board shall consist of not less than three (3) members, (1) one of whom shall be a physician, and such physician shall be health officer and executive of the board, and shall receive such compensation for his services as the council, or other bodies answering thereto, of the village, borough or city, shall determine. Said board shall be elected by the council, or other body answering thereto, of each village, borough and city, on the first (1) Monday of April A. D. one thousand eight hundred and eighty-five (1885). One member of such board shall be elected for and hold such office for the term of three (3) years, one for two (2) years, and one for one (1) year, and one member of such board shall be so elected annually thereafter, and all vacancies occurring in said board shall be filled in like manner. It shall be the duty of the health officer to perform and superintend the work prescribed in this act and shall perform such other duties as the board may require. He shall furnish to the board such information cognate to this act as from time to time they may deem necessary, and to make once in each year, in the month of May, and oftener if necessary, a thorough sanitary inspection of said town, village, borough or city, and present a written report of such inspection at the next meeting of the board of health, and he shall forward a copy of said report as soon as rendered to the state board of health; and he may at any time when necessary, examine into all nuisances, sources of filth and causes of sickness, and said board may make such regulations respecting the same as they may judge necessary for the public health and safety of the inhabitants, and every person who shall violate any order or regulation made by any board of health, and duly published, shall be deemed guilty of misdemeanor, and punished by a fine not exceeding one hundred dollars (\$100), or by imprisonment in the county jail not exceeding three (3) months.

SEC. 2. That section twenty-nine (29) of said chapter be and the same is hereby amended so as to read as follows: "All expenses incurred for the control of infectious diseases, etc., by any town or village board of health hereafter shall be audited by the county commissioners and paid out of the county treasury by orders on the treasurer drawn by the county auditor, and paid out of the general revenue fund of the county as other claims against the county are audited and paid. All expenses hereinafter incurred by any city board of health shall, in the first instance, be borne and paid out of the city treasury. The proper authorities of said city shall certify the amount required to reimburse said city, to the county auditor at the time of certifying other taxes and such auditor shall extend on the tax list of the county a tax sufficient to pay the amount so certified, which tax shall be collected as other taxes and paid over to the treasurer of said city."

SEC. 3. This act shall take effect and be in force from and after its passage.

Approved March 7, 1885.

MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, NOV. 15, 1888.

Monthly Supplement to Report on Vital Statistics, }  
No. 3, September 1888. }

(NOTE.—In the following table of death causes:

**Puerperal Diseases** includes *Puerperal Fever*, and the accidents and sequelæ of the puerperal state.

**Diarrhœal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of all, over five years of age.

**Diarrhœal Diseases of Children** includes intestinal diseases, under 5 years, during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis* *Tuberculosis Mesenterica* and *Hydrocephalus*, and *Tubercular Meningitis*.

**Infantile Debility** includes deaths, from unknown causes, of children under one year of age.

**Unclassified** includes those over 1 year reported as from unknown cause, and those which we have been unable to classify. Under this head are also included deaths from certain specified causes, not specified in the report following.)

*Deaths from all Causes*.—August, 1887, 1,459; August, 1888, 1,216; September, 1887, 1,155; September, 1888, 1,052.

TABLE SHOWING DEATHS FROM SPECIFIED CAUSES FOR THE FIRST THREE  
QUARTERS OF 1887 AND 1888.

DISEASE.	1887.			1888.		
	FIRST QUARTER.	SECOND QUARTER.	THIRD QUARTER.	FIRST QUARTER.	SECOND QUARTER.	THIRD QUARTER.
Measles.....	48	97	26	27	102	28
Scarlatina.....	70	53	29	42	27	12
Diphtheria.....	135	127	180	219	142	159
Croup.....	52	40	57	68	40	33
Whooping Cough.....	6	6	28	16	23	35
Typhoid Fever.....	71	61	289	115	75	154
Erysipelas.....	21	33	22	55	46	31
Puerperal Diseases.....	79	89	63	96	81	42
Diarrhœal Dis., over 5 yrs. old.	6	12	105	58	18	43
Diarrhœal Diseases of Children and Cholera Infantum.....	24	220	870	.....	23	758
Meningitis.....	82	154	132	155	157	131
Rheumatism.....	16	25	19	17	28	7
Cancer.....	36	74	54	74	56	64
Phthisis.....	215	339	276	297	281	276
Other Tubercular Diseases.....	16	33	46	55	53	29
Apoplexy and Paralysis, (Sunstroke).....	40	88	55	79	58	50
Insane.....	5	9	22	31	27	33
Heart Diseases.....	69	118	100	125	115	91
Bronchitis.....	108	103	66	132	148	55
Pneumonia.....	181	161	83	298	295	98
Enteritis.....	60	92	59	139	119	88
Diseases of Urinary Organs.....	34	57	47	57	39	41
Still-Birth.....	109	144	140	157	177	149
Infantile Debility.....	271	279	419	314	269	320
Premature Birth.....	.....	.....	.....	.....	.....	.....
Infantile Convulsions.....	124	142	129	148	134	110
Old Age.....	206	245	256	294	240	180
Violent Deaths.....	102	195	212	157	156	174
Unknown and Unclassified.....	97	108	111	140	82	76

SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Month, 1052.																			Total of each Disease.
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Measles .....																				1
Scarlatina.....																				2
Diphtheria.....																				64
Croup .....																				9
Whooping Cough..																				12
Typhoid Fever....																				84
Erysipelas.....																				8
Puerperal Disease.																				16
Diarrhœal Disease																				13
*Cholera Infantum																				185
Meningitis .....																				36
Rheumatism.....																				1
Cancer.....																				23
Phthisis.....																				83
Other Tubercular Diseases .....																				8
Apoplexy and Par- alysis.....																				14
Insane .....																				13
Heart Disease....																				21
Bronchitis.....																				18
Pneumonia and Pleurisy.....																				43
Enteritis .....																				32
Diseases of Urin- ary Organs .....																				12
Still Birth.....																				56
Inf'ntile D'bility } Premature Birth }																				105
Infantile Convuls- ions .....																				28
Old Age.....																				60
Violent Deaths....																				47
Unclassified .....																				58
Total Males.....																				
Total Females....																				
Grand Total.....																				
*Diarrhœal Diseases of Children, under 5 years, included under this heading.																				



OF THE SECRETARY OF THE STATE BOARD OF HEALTH, (UP TO NOVEMBER 15TH, 1888).

Per cent. of deaths during the month.	SEX.		SOCIAL STATE.	AGE.														NATIVITY.		PARENT NATIVITY.					La. alities Invaded	Coutries.																	
	Males.	Females.		Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.			Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.	Both Foreign.	American Father.	Foreign Mother.	Foreign Father.	American Mother.	Unknown.						
.09	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
.18	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	
7.21	2	9	39	33	1	1	1	2	2	2	1	2	20	3	1	1	1	1	1	1	1	1	1	1	14	6	10	4	4	9	20	1	1	2	4	21	19	1	1	1	1		
1.15	2	9	39	33	1	1	1	2	2	2	1	2	20	3	1	1	1	1	1	1	1	1	1	1	14	6	10	4	4	9	20	1	1	2	4	21	19	1	1	1	1		
8.08	61	23	41	15	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	6	10	4	4	9	20	1	1	2	4	21	19	1	1	1	1		
.79	6	2	1	3	1	1	1	2	2	2	1	2	20	3	1	1	1	1	1	1	1	1	1	1	14	6	10	4	4	9	20	1	1	2	4	21	19	1	1	1	1		
1.58	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16		
1.25	7	6	4	1	1	1	1	2	2	2	1	2	20	3	1	1	1	1	1	1	1	1	1	1	14	6	10	4	4	9	20	1	1	2	4	21	19	1	1	1	1		
1779	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	
3.46	22	94	94	18	4	5	6	70	21	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	48	12	29	5	1	19	66	2	4	3	57	40	1	1	1	1			
.09	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
2.21	6	17	2	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
7.98	32	51	18	29	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
.79	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
1.34	11	3	2	7	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1.25	10	3	6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.04	10	3	7	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1.73	10	11	4	5	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
4.13	23	8	8	5	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
3.07	15	20	13	5	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
1.16	6	17	10	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
5.38	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	
10.	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	
2.49	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
5.77	34	26	1	7	17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
4.52	36	11	24	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
5.77	34	11	18	11	2	3	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	24	15	6	3	1	2	1	2	1	2	1	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
571	420	110	24	17	210	46	11	12	9	29	15	12	64	39	26	24	29	26	12	7	194	55	147	156	19	117	334	10	28	82	10	22	58	10	22	58	10	22	58	10	22	58	
	481	332	111	33	5	168	46	16	7	9	25	12	18	52	34	27	14	20	13	17	3	139	66	146	124	6	95	295	20	50	140	20	50	140	20	50	140	20	50	140	20	50	140
571	481	752	221	57	22	378	92	27	19	18	54	27	30	116	73	53	33	49	39	29	10	333	121	293	280	25	212	629	20	50	140	20	50	140	20	50	140	20	50	140	20	50	140

*MONTHLY STATEMENT OF BIRTHS—SEPTEMBER, 1888.*

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE  
OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO  
NOVEMBER 15, 1888.)

GRAND TOTAL, 1545.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
SEX.	Males .....	48.74	1545	753	.....	...
	Females.....	50.81	.....	.....	785	.....
	Unknown .....	.45	.....	.....	.....	7
COLOR.	White.....	99.94	1544	753	784	7
	Colored.....	.06	1	.....	1	.....
	Unknown .....	.....	.....	.....	.....	.....
CONDI- TION.	Legitimate.....	99.35	1535	748	780	7
	Illegitimate.....	.65	10	5	5	.....
	Unknown .....	.....	.....	.....	.....	.....
NO. AT BIRTH.	Single .....	98.96	1529	744	778	7
	Twins .....	1.04	16	9	7	.....
	Triplets .....	.....	.....	.....	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY.	Both American.....	28.22	436	207	227	2
	Both Foreign.....	54.56	843	407	433	3
	Am'n Father—Foreign Mother....	4.60	71	41	30	.....
	Foreign Father—Am'n Mother....	10.87	168	86	81	1
	Unknown .....	1.75	27	12	14	1

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD. RED WING, MINN.

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VOL. IV. NOS. 9 and 10. NOVEMBER AND DECEMBER, 1888. WHOLE NO. 46

## INFECTIOUS DISEASES REPORTED DURING THE MONTHS OF NOVEMBER AND DECEMBER.

### DISEASES OF MEN.

Diphtheria.....	{ cases, 223
	{ deaths, 56
Scarlatina.....	{ cases, 52
	{ deaths, 6

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	31
Reported during the months.....	8
Killed.....	10
Released.....	14
Isolated.....	4

Remaining January 1st, 1889, isolated or not accounted for..... 15

NOTE.—Most of these are cases exposed, and isolated for further observation.

IMPORTANT TO CLERKS OF TOWNSHIPS.—RETURNS OF VITAL  
STATISTICS.—THE SECRETARY'S CERTIFICATE TO CLERKS OF  
COURT. RED WING, January 15, 1889.

Despite the repeated warnings which I have given, many Clerks of Townships have neglected to keep their monthly reports accurately. As a consequence they send in now returns for nearly every month in 1888; some send returns as far back as 1884, mixed together with little or no attempt at arrangement. As a consequence, the labor of this office is increased many fold, just when, *if these clerks had done their duty*, we should be able to return certificates. The payment of faithful workers is delayed by the carelessness of the tardy ones.

As the law requires me to return certificates on or before January 15, I have put all available force to recording up to tonight, and shall then stop further record, till all returns now in are recorded and certified to. That done, the record will be again made up and certificates issued as soon as completed. Our work is, in this way, largely increased and its regular order broken up. Will begin issuing certificates to morrow morning in alphabetical order of counties, because that is the way in which the records are kept.

C. N. H.

A MERRY CHRISTMAS AND HAPPY NEW YEAR! to each one of the four thousand men who, as members of Boards of Health, in every township, village and city of the State, have helped in the prevention of disease, and the saving of life, in 1888. Your reasonable success must have added to your enjoyment of the holidays.

*Christmas is the feast of the children.* In view of this, Vital Statistics,\* let every one who helped them to make Christmas merry, join with us in the attempt to make a special and united effort, for the coming year, against the causes which steadily pile up so dreadful a record of preventable sickness, death and permanent disability among them. PUBLIC HEALTH will devote particular attention to the subject. Let us make a vigorous campaign and come to another Christmas, as we may, with a *record of children saved*, which shall make the feast a thanksgiving, too.

Will Health Officers and Chairmen of Local Boards read this note at the next meeting, discuss the subject, and forward the record of action as soon as practicable. Make any suggestions which occur to you to make the work most thorough and effective.

THE RATE, AND CAUSES, OF THE MORTALITY OF CHILDREN UNDER FIVE YEARS OF AGE, in the light of the Vital Statistics of 1886-87-88, now in the hands of Local Boards of Health and Health Officers, deserve immediate and serious attention.

Beside the large tables, (pp. 28-30, Vital Statistics,) which contain most of the facts, table No. XII. is constructed to show *general mortality by months; the per cent of mortality under five years to all deaths, from each disease cause; and the ages of the dead under five years by years, from each specified disease.* The large tables furnish material for study which any one interested can tabulate for himself, in a variety of instructive ways. The second appendix to the report of the Secretary to the State Board of Health is a note giving many conclusions gleaned from these tables; and plate No. IV., shows, in a graphic way, the infant mortality *by months under three years* of age, for 472 in 1887, and 879 in 1888, (of which these facts were on record when the diagram was prepared.) A study of the data thus presented, ought to be enough to induce all who can, to help get at the other and

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\*) See pp.26-31, of Vital Statistics and the Secretary's report to State Board of Health, and its Appendix.



important facts, of *professional* and *family* experience, in every township, village and city. These, added to the evidence of the statistics, will enable us all to have clearer ideas of this very important matter than ever before, and will suggest not only new directions for study, but valuable means for the removal or diminution of one or more of the causes of death, *and sickness, too*, at work upon young children.

THE DEATH RATE IN MINNESOTA has steadily decreased during the last five years, (see table VIII., p. 24, of Vital Statistics, already published.)

In 1883, the death rate per 1,000 of the population was 11.46; in 1886, the rate was 11.06; and in 1887, 9.9. Very few understand what so apparently trivial a reduction as 1.06 in 1,000, or 0.106 per cent means here. It represents the saving of human lives between 1886 and 1887, and it means that 1,438 men, women and children escaped death, who, had the mortality rate of 1886 continued in 1887, would have died.

Every death represents at least ten persons constantly sick, so that this reduction in mortality means, further, more than 14,000 less cases of sickness in 1887 than in 1886. Beneficiary societies allow fourteen days' sickness to each case; apply that rule and there were 196,000 less days of sickness in 1887 than in 1886. If one wished to figure the money value of lives saved, and assumed \$1,000 as the average, a saving of 1.06 deaths in 1,000 living, means a saving of \$1,438,000 to the State. Can any one figure the saving of anxiety, suffering and care, so obtained?

Of all deaths in 1887, twenty-seven per cent were of persons between twenty and sixty years of age. Assume the same rule to have obtained among those who escaped death, and we have 388 men and women, of the self-supporting age, saved to the population in 1887. Forty-five per cent of all deaths in that year were of children under five years of age, so that the difference between the death rate of 1886 and 1887, means 645 little ones saved from death in 1887, as compared with 1886.

We have not yet found time to trace out the directions in which this saving of life has occurred, and very likely shall not be able to do it fully. Still, the record remains an encouragement and a stimulus to persevere.

THE MORTALITY FROM THE INFECTIOUS DISEASES FOR FIVE YEARS, 1882-87.—In table XIV., p. 28, Vital Statistics, these diseases are arranged to show relative mortality, from each by years:

*Diphtheria* exhibits the most marked and steady decline, the deaths in 1887 being not sixty-eight per cent of those of 1883.

*Whooping Cough* has declined irregularly, and the deaths of 1887 were but forty-seven per cent of those of 1886.

*Typhoid Fever*, after an irregular but marked decline for three years, is again on the increase.

*Cholera Infantum*—a very indefinite and unfortunate term. It includes in 1887, deaths from diarrhoeal affections of children, under five years of age, during the summer months. This may partially account for the apparent increase of deaths which is chiefly due to the actual increase in number and variety of these affections in the summer of 1887, classified together under this head.

THE PERIOD OF INCUBATION OF INFECTIOUS DISEASE.—Every Health Officer, who has had occasion to answer this question, has been puzzled by the conflicting replies of the authorities, and his own experience. It is now suggested, by recent investigations, that the visible evidence, in fever and vital disturbances, occasioned by the invasion of a specific poison, occurs, not at a definite time, but when the invading poison has in any way overcome the resistance of the normal forces of the body, which are promptly opposed to it. These opposing forces are the specific virus on the one side, and the white corpuscles of the blood on the other. The last are the police force, and standing army, of the body. Some very interesting and important experiments have been made recently in illustration of this increasingly important fact, of which we shall quote the conclusions.

LEPROSY.—Despite the evidence which we have given in recent numbers of PUBLIC HEALTH IN MINNESOTA, there is a fear on the part of some that the disease may yet spread. While every case reported is carefully watched, there is not the slightest ground for such fear, so far as we can discover. Should evidence to the contrary appear we shall know it as soon as any one, and will publish the fact immediately.

Meantime in answer to questions, which have been asked, we submit the following excerpts from a recent letter of Dr. Gronvold,

who has made the most careful study of the disease in the Northwest:

1. There is no doubt that the disease described in the Bible, and spoken of by Egyptian and Greek authors, under names supposed to designate different forms of leprosy (there were four varieties at different times specified), is the same disease which is known as leprosy at present, though perhaps some of the names used have also been applied to less important skin diseases.

2. There is no dispute, to my knowledge, as to the identity of the disease at present called leprosy, the world over; the same symptoms; the same course, and the same bacterium, so far as it has been searched for. The only difference is in the degree of severity and virulence, and in the facility with which it may be communicated. In all these respects the disease differs with climate, manner of living and other circumstances. This is evident when we compare the duration of the disease in different places, and the opinions of different scientific observers as to its etiology and communicability.

While in the Sandwich Islands it has been so clearly contagious that no medical man studying it there has hesitated to declare it so, close European observers, who studied it in that more northern climate, and among civilized people, have disbelieved in its infectiousness. Drogat-Landre, who studied it in the Dutch colonies, in the moist climate of Surinam, pronounced contagion the only source, (Paris, 1869,) while Boeck and Danielson, (Norway,) whose works have made an epoch in the study of the disease, (Paris, 1848,) put stress on heredity as the principal source, and doubted its being contagious.

\* \* \* Our experience in the Northwest States has made it probable that the disease, to date, is not hereditary; not a single case has yet been discovered in the forty years of immigration, where a child born in these States, of leprous parents, has inherited the disease, nor for that matter got it in any other way. Our report has already brought one specialist to the Northwest, to look into the matter. It is satisfactory (see Dr. Hansen's report, June number of this journal), to know that his experience coincides with ours. Whether it is too early to draw the conclusion—no inheritance—from the statistics collected, or not, the facts, so far known, seem to support the theory.

CHR. GRONVOLD, M. D.

AMERICAN PUBLIC HEALTH ASSOCIATION.—The Milwaukee meeting was a representative one—State Boards of Health sent delegates as did the Army and the Marine Hospital service, and, Local Boards of Health. Valuable papers were read, and some which would have been valuable, were, for one reason or another, not presented. There was a notable absence of interesting discussion, and some subjects which were expected to receive valuable volunteer treatment, received none at all.

If the Association expects to keep the lead as the representative of active and progressive work, there must be permitted and encouraged, more discussion of disputed questions of sanitary practice, than is now the custom, and in this way draw out the

accumulated experience of the members, which is abundant and varied enough, as most of those who attend are Health Officers and members of Boards of Health, needing only the proper occasion, to make contributions of the greatest interest and value. It should be true that the discussion of papers are of more value, often, than the papers themselves.

The new President was consulted in the appointment of all the committees, and thus spared the difficulties which his predecessor encountered in that direction.

Some innovations were introduced at this meeting which proved their value by trial. Dr. McIntosh, of Chicago, whose success in the use of the stereopticon and solar microscope is well known, kindly volunteered his assistance. He prepared the slides and apparatus to illustrate the papers on Quarantine of the St. Lawrence, by Dr. Montizambert; on Tuberculosis, by Dr. Salmon; and on Furnaces for the Destruction of Garbage, by Dr. Kilvington. This method will be the rule hereafter for this purpose, to which it proved itself admirably adapted. Dr. Theobald Smith's paper on The Relations of Bacteria to Disease, was beautifully illustrated by cultures. The Pullman System of Sewage Disposal on Cultivated Land, was described by Mr. D. Doty, detailed by the company for the purpose, and he was thoroughly catechized by his audience. He proved that its commercial value did not detract from its sanitary service. Several members visited Pullman on their return home. Dr. McIntosh gave several demonstrations of the value of the solar microscope for the study and demonstration of bacteria, and of healthy tissues, and morbid growths.

The next meeting will be held at Brooklyn, New York.

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## A DULTERATIONS OF FOOD—WHAT ARE THEY? AND HOW TO DETECT AND AVOID THEM.

If one were to judge by the statements so frequently made in the newspapers, and in many articles and reports on this subject, he might easily conclude that no article of food, or drink, was free from this risk, and that it was always of a dangerous kind.

There is enough adulteration proven to justify a serious study and report on the subject, but it is not as serious nor as dangerous as is commonly represented. To answer many inquiries from Health Officers and others who have no opportunity to consult the voluminous literature of Food Adulteration, it is proposed to prepare a series of articles on this subject—from the standpoint of the Health Officer and Housekeeper—for it is with articles of ordinary



domestic use that we are most concerned. To begin with the staples of daily, and common, necessity:

*Wheat Flour*—Is not adulterated by the addition of other flours, but in Minnesota is pure. The division into grades has probably resulted in a *whiter* article in the better grades, but has distributed the essential ingredients of "whole" flour through the various grades. It is to be hoped that we will yet have one grade containing the best, in every respect, of the whole wheat, which, from the standpoint of a perfect food, is what we ought to have.

*Bread*—The very large majority of our population eat "home-made" bread, which avoids the possible dangers of competition in the manufacture of "baker's bread." There is no question that the better mechanical facilities, and the use of the brick ovens, with the skill which belongs to a single trade, ought to make the bakers' bread the best in perfect admixture, lightness and crust, if the same quality of flour is used. To secure these advantages the trade must be under a careful inspection, so that inferior flour and manufacture may not ruin the honest makers of so essential an article of daily food.

*Rye Flour*—This very valuable and healthful food is coming into more general use. There is no evidence of its adulteration in our State. Mixed in due proportion with wheat flour, it makes a bread which is the sweetest, most nutritious and healthful, we have.

*Corn Meal*—*Oat Meal*—Are not adulterated. The last is not used as a flour, with us, but cracked, and therefore less likely to admixture than if ground.

*Hominy*—The modern substitute for the "samp" of our ancestors, is of necessity pure, and a variety of corn product worthy of more general use.

*Milk*—This food is supplied to the vast majority of our people, pure. It is only in the centres of population that it is adulterated, by removing the cream and adding water. They are not the greatest danger. Milk is very liable to putrefactive changes, from the introduction of the products of decomposition, by untidy methods of milking, by dirty utensils, or containers, and by improper care. It is also affected by the health and disease of the cow, her care, and food. Later we will discuss methods of preventing their evils. Now we are only concerned to know that no other adulteration than those mentioned are common in this State. There is a wide and remunerative opportunity to any who will establish dairies on strict sanitary principles and furnish *pure* milk in sealed jars, under bond for its *quality, quantity* and healthfulness.

*Butter*—The most common adulterations are the use of artificial color, and mixtures of inferior qualities with good; both are frauds. Oleomargarine is so limited by the law, that there should be no danger of deception. For home use it is best to buy butter of the producer directly, or next, of middlemen of established reputation. One thing is sure, that if people *will* have good butter, and make it a sufficient inducement to dealers to always supply it, it can be had, and at reasonable rates, anywhere in Minnesota.

Satisfactory methods of analysis are difficult as yet outside laboratories, but it is not too much to expect that a method of sufficient accuracy will yet be found for popular use, to detect the addition of other fats.

*Sugars*—Crushed and granulated sugars which are *bright, crystalline, dry* and *odorless*, are pure. Both varieties are abundant and cheap. They are not

only purer but sweeter, and really cheaper, than any other grades. Pulverized sugar is more liable to adulteration and the brown sugars still more.

*Syrups*—The commonest adulteration of cane and maple syrup is glucose. The easy and safest plan for domestic table use, for buckwheat, or other cakes, for example, is to make a syrup of the granulated, or best grade of light brown, sugars. Not all syrups in the market are adulterated, but the difficulty is to know the genuine from the false, and this method is an easy, and surely safe one.

*Coffee*—Browned and ground in packages, is very commonly adulterated, with chicory or other vegetable substitute. *Buy the green berry, brown, and grind at home, is a sure safeguard against adulterations, none of which, so far as known, are dangerous to health.*

*Tea*—Of sixty-six samples examined in Massachusetts in 1886, but two were condemned—one as of inferior quality and one as dirty. No foreign leaves detected. This evidence corresponds with others, so that it is probable that a fair price will secure a good article. Tea culture is more extensive than ever before, and the production of a good article equal to the demand.

(TO BE CONTINUED.)

#### DIPHTHERIA IN BLOOMINGTON TOWNSHIP, HENNEPIN COUNTY.

**O**CTOBER 31, the Health Officer of Minneapolis reported that a small epidemic of diphtheria was progressing in Bloomington Tp. First case, two weeks ago, and within the past ten days twelve families have been infected. Immediately on receipt of this notice, the Secretary wrote to the Chairman of the Board of Health of Bloomington Tp., (Mr. W. S. McLeod,) for facts, to which he replied:

BLOOMINGTON, Minn., November 5, 1888.

*Dr. C. N. Hewitt, Secretary State Board of Health,*

DEAR SIR:—Yours of the second, requesting me to report the cases of diphtheria in several families, which was reported to you by individual of this town, there has been only one death, which was reported to me, and posted notice at the house, and there has been no communication to the house as far as I can learn. In the case of the other families, I have posted notice on the house and ordered no one to have any communication with them. There have been no more new cases yet and the others are doing well, excepting one child one of the twins of the deceased.

Will inform you in a few days again. The doctor tells me that he thinks it only mild cases, which we hope will soon be over.

Respectfully, W. S. McLEOD.

November 8, Chairman submitted a report of the medical inspector employed by their Board, as follows:

*To the Board of Health, Bloomington, Hennepin County, Minn.:*

I beg leave to report that at your request and accompanied by Mr. W. S. McLeod, the Chairman of your Board, I have this day made a careful investigation of the outbreak of diphtheria in your town. I find, first, that the disease is confined to a few families living within a radius of two miles. Up to this date there have only been two deaths, being the twin children, four years old, of Mr. Wm. Harrison. In Mr. Harrison's family there were six in all attacked. The survivors are now all convalescent. Several families were reported to be suffering from diphtheria, but upon careful inspection it was found that they

were only suffering from inflammatory sore throat. Those who actually had or were suffering from the disease were as follows:

1. Wm. Harrison's family. Six were attacked; two deaths; four recoveries.
2. F. J. Standish's. Two children; both convalescent.
3. Joseph Harrison's. Two adults, who contracted; the disease from one of Wm Harrison's children, who had been taken to Joseph Harrison's house when his twins were pronounced to be suffering from diphtheria. These two adults are convalescing.
4. Henry St. Martin's family. The mother and three children. The mother is convalescing, but there are still membranous exudation in the throats of all three children.

5. J. Davis' family. One girl, fourteen years old, convalescing.

6. Joseph Pepin's family. Mother and infant, one year old. Infant recovered; the mother still suffering from diphtheretic paralysis of the uvula.

The history of the outbreak appears to be as follows:

Four weeks ago, Mr. and Mrs. Pepin, accompanied by the child, visited Minneapolis, in the vicinity of Emerson and Twelfth Avenues North. On Friday following, Mrs. Pepin and infant were taken ill simultaneously. No physician was called, although the membranous patches were seen in both throats. They did not recognize the malady. They were frequently visited by Mrs. W. E. Davis, who also visited her brother-in-law's family, (Wm. Harrison) going from Pepin's house to W. Harrison's. When the disease attacked one of the twins, the other was taken to Joseph Harrison's, where shortly after it was attacked, or rather the disease developed.

The family of Standish, who lives across the road from Joseph Harrison, frequented the house. The disease then appeared in the Standish family.

The St. Martins, who lived near Pepin's, visited the latter's house frequently during the time Mrs. Pepin and child were ill, and sometime after were attacked.

The disease was probably conveyed to James Davis' family by his daughter-in-law, Mrs. W. T. Davis, who went back and forward between Pepin's, Wm. Harrison's and James Davis'.

The houses of those afflicted with diphtheria have all been placarded by Mr. McLeod, with Board of Health notices quarantining them, besides distributing all the necessary documents issued by the State Board of Health.

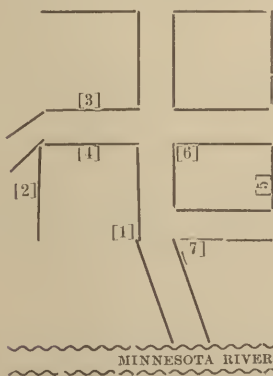
Mr. McLeod has been very energetic in enforcing the law and measures to stamp out the disease.

Accompanying this report is a rough sketch map, giving the names and relative positions of the families which have been attacked.

Respectfully submitted,

ARCH'D C. FAIRBAIRN, M. D.

P. S.—Drs. Crosby & Golden of Minneapolis, have attended all the cases.



1. Joseph Pepin's house.
2. Wm. G. Harrison's house.
3. Joseph Harrison's house.
4. F. J. Standish' house.
5. James Davis' house.
6. Henry D. St. Martin's house.
7. Wm. T. Davis' house.

From the report of Dr. Fairbairn, to the Local Board of Health, it appears to have been suspected that the disease was contracted by the Pepin family in Minneapolis. The Secretary submitted the facts reported by Dr. Fairbairn, to the Health Officer of Minneapolis for investigation. He reported, November 17:

"I have investigated the matter concerning your reference of a recent date and pertaining to the Bloomington Township epidemic of diphtheria and find the following facts: That Mr. and Mrs. Pepin and child did visit in the neighborhood of 1212 Emerson Avenue South, about four weeks ago; that Mrs. Pepin and child remained at the house about two hours while the husband went out in the city shopping. I further find that the child was taken with colic while at the above mentioned house, but no physician was called. Upon Mr. Pepin returning to the house they immediately left for their home at Bloomington. Upon further investigation I find that we have no record of any contagious disease having been reported within several blocks of the said house during the past year, and further, that there has been no diphtheria in the house visited by the said Pepin and family, nor any other contagious or infectious disease; in fact I find the entire family enjoying good health, and have not had a physician called for several years to said family, so that I am now satisfied that the disease was not contracted as your letter would suggest."

November 24, Secretary submitted the facts reported by the Health Officer of Minneapolis, to the Chairman of Bloomington Township, who replied, December 7:

"Yours of November 24, and enclosed a copy of letter of Dr. Kilvington, is duly received. The disease, diphtheria, has disappeared from our town, and I trust there will be no more cases for some time. Our schools are once more open for children. We will endeavor hereafter to keep a close watch for any more such cases appearing in our town. We have ordered the citizens to be more cautious and let us know of any case appearing at once."

#### LEGAL OBLIGATION TO REPORT BIRTHS AND DEATHS— ATTORNEY GENERAL'S OPINION.

MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS, }  
OFFICE OF SECRETARY,  
RED WING, Minn., December 26, 1888. }

*Hon. Moses E. Clapp, Attorney General, Capitol, St. Paul, Minn.,*

SIR:—The following question is likely to be raised formally in several localities. It has been asked of me several times. The law, Chapter 114, of 1887, Sections 2 and 3, require physicians, midwives, heads of families, and public institutions, to report births and deaths, and affixes a penalty for disobedience. Can such persons legally escape such penalty on the ground that the service is one for which no pecuniary compensation is made? When this act was under advisement originally this question arose. This service, as provided in our law, has been enforced in several States by law, and I do not know of a State where a fee is paid therefor. The principle of the law, as I understand it, is that such notification is of the character of a provision for public safety against disease and crime—which every citizen, lay or professional, is bound to give, as he is of the presence of infectious disease, of a fire, flood, or any other event likely to effect public safety.

There are doubtless decisions of courts in this matter, and I am instructed, to ask your opinion, as a guide for the conduct of this Board.

Respectfully,

CHARLES N. HEWITT, Secretary.



ST. PAUL, January 3, 1889.

Dr. Charles N. Hewitt, Red Wing. Minn.,

DEAR DOCTOR:—Your favor of the 28th ult. is at hand. You inquire whether Sections 2 and 3, of Chapter 114, of the General Laws of 1887, requiring physicians, midwives, heads of families, and so forth, to report births and deaths, is valid in view of the fact that no compensation has been nor is there any provided for. Without detailing at length the reasons which lead to the conclusions, it is sufficient to say that the State can require the services therein provided for without making any provision whatever for compensation.

I am very truly yours,

MOSES E. CLAPP, Att'y General.

**P**REVENTABLE DISEASES OF DOMESTIC ANIMALS.—If our farmers and stock raising readers have taken any interest in the work of this department during the last two years, they have discovered that not a single outbreak of disease has been reported which has not been proved, in its history, or by measures of control, to have been preventable. Even glanders, the most extensive of them all, is communicated chiefly by direct contact with infected animals and things, rarely in any other way.

*Malignant Catarrh of Cattle*, which has killed a good many cattle, we have shown to be easily preventable, as was the recent outbreak of so-called "Foot and Mouth Disease." Some of the reported "Lung Disease," "Abortion," and "Black Leg," have been directly traced to insufficient, or bad food, close quarters, and bad care, and have ceased as soon as the almost self-evident cause was removed.

The lesson of better care, better food, and healthier quarters, ought not to be lost; nor the other lesson, that to apply the name of a serious disease to every sickness, is not the best way to cure or prevent it.

There have been but eight reports of outbreaks of glanders in November and December, 1888; a marked decrease over any other two months since the Local Boards of Health had charge of the disease.

**C**ATTLE DISEASES IN CANADA.—Under date of December 31, we have official assurances from the inspector of stock of the Dominion, that there are no such diseases in the Dominion, and none have occurred recently except "a few slight local outbreaks of anthrax, which have been promptly stamped out."



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, Dec. 15, 1888.

Monthly Supplement to Report on Vital Statistics, }  
No. 4, October 1888. }

(NOTE.—In the following table of death causes:

**Puerperal Diseases** includes *Puerperal Fever*, and the accidents and sequelæ of the puerperal state.

**Diarrhœal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of all, over five years of age.

**Diarrhœal Diseases of Children** includes intestinal diseases, under 5 years, during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tuberculosis Mesenterica* and *Hydrocephalus*, and *Tubercular Meningitis*.

**Infantile Debility** includes deaths, from unknown causes, of children under one year of age.

**Unclassified** includes those over 1 year reported as from unknown cause, and those which we have been unable to classify. Under this head are also included deaths from certain specified causes, not specified in the report following.)

*Deaths from all Causes*.—September, 1887, 1,155; September, 1888, 1,050; October, 1887, 1,213; October, 1888, 1,041.

MONTHLY STATEMENT OF BIRTHS—OCTOBER, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO DECEMBER 15, 1888.)

GRAND TOTAL, 1950.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
SEX.	Males .....	53.54	1950	1044		
	Females.....	45.95			896	
	Unknown .....	.51				10
COLOR.	White.....	99.95	1949	1044	895	10
	Colored.....	.05	1		1	
	Unknown.....					
	Legitimate.....	99.69	1941	1040	894	10
CONDI- TION.	Illegitimate.....	.31	6	4	2	
	Unknown .....					
	Single .....	97.44	1900	1013	877	10
	Twins .....	2.56	50	31	19	
NO. AT BIRTH.	Triplets .....					
	Unknown .....					
	Both American.....	25.28	493	293	226	4
	Both Foreign.....	55.59	1084	597	485	2
	Am'n Father—Foreign Mother....	4.93	96	47	49	
	Foreign Father—Am'n Mother....	10.10	197	105	90	2
	Unknown .....	4.10	80	32	46	2
PARENT NATIVITY.						

SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Month, 1911.																			Total of each Disease.
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Measles .....	5																			5
Scarlatina.....	11																			11
Diphtheria.....	95																			95
Croup .....	20																			20
Whooping Cough..	12																			12
Typhoid Fever....	118																			118
Erysipelas.....	7																			7
Puerperal Disease.	18																			18
Diarrhoeal Disease	9																			9
*Cholera Infantum	76																			76
Meningitis .....	40																			40
Rheumatism.....	1																			1
Cancer.....	17																			17
Phthisis.....	79																			79
Other Tubercular Diseases.....	7																			7
Apoplexy and Par- alysis.....	12																			12
Insane .....	15																			15
Heart Disease.....	40																			40
Bronchitis.....	15																			15
Pneumonia and Pleurisy.....	63																			63
Enteritis .....	26																			26
Diseases of Urin- ary Organs .....	7																			7
Still Birth.....	52																			52
Inf'ntile D'bility } Premature Birth }	111																			111
Infantile Convuls- ions .....	13																			13
Old Age.....	69																			69
Violent Deaths....	47																			47
Unclassified .....	56																			56
Total Males.....																				
Total Females....																				
Grand Total.....																				
	*Diarrhoeal Diseases of Children, under 5 years, included under this heading.																			

\*Diarrhoeal Diseases of Children, under 5 years, included under this heading.



OF THE SECRETARY OF THE STATE BOARD OF HEALTH, (UP TO NOVEMBER 15TH, 1888).

Per cent. of deaths during the month.	SEX.		SOCIAL STATE.	AGE.												NATIVITY.				PARENT NATIVITY.																		
	Males.	Females.		Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.	Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.	Both Foreign.	American Father.	Foreign Mother.	Foreign Father.	American Mother.	Unknown.	Localities Invaded.	Counties.	
.48	4	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	4	2	2	2	2	1	4	4		
1.06	5	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	23	19	9	2	3	12	33	3	3	3	3	1	6	6	
10.4	56	56	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	26	20	4	9	2	10	36	4	4	3	3	25	24			
1.15	7	5	7	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	2	1	1	5	1	1	1	1	1	11	9			
11.33	76	57	42	28	14	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	23	43	4	15	46	32	3	3	3	3	1	14	32	29	
.67	4	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	2	2	1	2	2	6	3	3	3	3	3	1	7	7		
1.73	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	3	3	3	12	3	14	3	3	3	3	3	3	1	12	12	
.87	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	1	1	1	2	2	2	2	2	2	2	2	2	1	6	6	
7.30	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	30	7	4	4	10	25	4	2	4	4	4	4	4	33	27		
3.84	21	35	18	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	27	4	2	1	1	9	16	2	2	2	2	2	2	2	4	33	27
.10	19	17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	4	6	3	11	8	6	8	2	1	2	16	15				
1.63	8	9	1	7	5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	5	4	2	5	4	4	4	4	4	4	1	14	13		
7.59	33	46	16	24	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	6	19	1	5	25	2	2	2	2	2	2	47	50		
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